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PETROLEUM.

DIRECTORY OF THE

OIL COMPANIES

OF PHILADELPHIA,

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H C Hickok, President, Edward H Flood, Secretary.

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THE SUPPOSED ANIMAL ORIGIN OF PETROLEUM.

The theory of the participation of animal matter in the formation of petroleum flies in the face of all chemical law. The nitrogen of animal material in the temperate and cold climates invariably unites with the hydrogen of the same body. "Ammonia is the last product of the putrefaction of animal bodies. A generation of a thousand million of men are born and die every thirty years; thousands of millions of animals cease to live and are reproduced in a much shorter period. Where is the nitrogen which they contained during life? All animal bodies, during their decay, yield the nitrogen which they contain to the atmosphere, in the form of ammonia. Even in the bodies buried sixty feet under ground in the church-yard of the Eglise des Innocens, at Paris, all the nitrogen contained in the adipocere was in the state of ammonia. Ammonia is the simplest of all the compounds of nitrogen, and hydrogen is the element for which nitrogen possesses the most powerful affinity."—*Liebig.* "Plants, as we know, grow perfectly well in pure charcoal, if supplied at the same time with rain-water; rain-water can contain nitrogen only in two forms, either as dissolved atmospheric air or as ammonia, which consist of this element and hydrogen. Now, the nitrogen of the air cannot be made to enter into combination with any element except oxygen, even by the employment of the most powerful chemical means. We have not the slightest reason for believing that the nitrogen of the atmosphere takes part in the processes of assimilation of plants and animals; on the contrary, we know that many plants emit the nitrogen which is absorbed by their roots, either in the gaseous form, or in solution in water. But there are, on the other hand, numerous facts showing that the formation in plants of substances containing nitrogen, such as gluten, takes place in proportion to the quantity of this element which is conveyed to their roots in the state of ammonia, derived from the putrefaction of animal matter."—*Ibid.*

It surely will not be pretended that the dead fish are directly transformed into petroleum; that the bones and other insoluble parts undergo this sudden and complete change;—the analysis of petroleum does not disclose the presence of phosphate of lime in such quantities as the supposition of this kind of transformation of the bones would imply. We must, then, conclude that the soft parts only are embraced in the Professor's theory. If it be admitted that the soft parts only take part in the formation of bituminous matters, then we must suppose a true decomposition, in which the constituent elements will arrange themselves with a view to form new products, in doing which they will combine with those bodies for which they have the highest affinity. Now, we know that hydrogen is the body for which nitrogen has the highest affinity; but petroleum is a compound of hydrogen and carbon, and if there be decomposition, with what does the nitrogen of the animal matter combine? Though plants are known to give off pure nitrogen during the processes of assimilation, there is no evidence that it is given off by the animal under any circumstances. How, then, are we to account for its escape? We have seen that it cannot be made artificially to combine with any body except oxygen, and if a combination of this kind were formed, the product would be nitric acid, which is not found in these circumstances. It cannot combine with the hydrogen, as this is required to form the petroleum; it cannot combine with the carbon, or the product would by cyanogen, a substance unknown in petroleum localities. There is, then, no chance for its escape except as a simple body. Nitrogen in a simple form, as a natural product, is unknown in chemistry, and there needs some very substancial evidence to convince the world of its existence under such circumstances. In all the excavations that have been made throughout the world it has been found that the nitrogen of animals exhumed, has been in the state of ammonia, as in the case of the bodies dug from the church-yard of the Eglise des Innocens. But other considerations render it certain that the nitrogen of decomposing animal matter does not escape into the air in a free state. Analyses of the atmosphere does not show its presence, and as its conversion into nitric acid would involve the necessity for the intervening action of electricity, we must conclude that it does not escape in a simple form; and if it does not thus escape, there can be no decomposition, and hence animal matter can have no agency in the formation of petroleum so far as one element—the nitrogen—is concerned. Upon the supposition of its combination with the hydrogen, there could be no petroleum formed, as the product would be ammonia and not a bituminous substance.*

But nitrogen is not the only body which would be interfered with in the round of duties assigned it by the great Architect of the world, as we shall presently see.

"But we have formerly stated that all the analyses of atmospheric air hitherto made, have failed to demonstrate the presence of ammonia, althongh, according to our view it can never be absent. The quantity of nitrogen contained in a cubic foot of air is certainly extremely small, but, notwithstanding this, the sum of the quantities of nitrogen from thousands and millions of dead animals, is more than sufficient to supply all those living at one time with this element."—*Liebig.*

"Experiments made in this laboratory, with the greatest care and exactness, have placed the presence of ammonia in rain water beyond all doubt. * * * All the rain-water employed in this enquiry was collected six hundred paces southwest of Giorren, whilst the wind was blowing in the direction of the town. When several hundred pounds of it were distilled in a copper still, and the first two or three pounds evaporated, with the addition of a little muriatic acid, a very distinct crystallization of sal ammoniac was obtained; the crystals had always a brown or yellowish color. Ammonia may likewise be always detected in snow-water. Crystals of sal ammoniac were obtained by evaporating in a vessel with muriatic acid several pounds of snow, which were gathered from the surface of the ground in March, when the snow had a depth of ten inches. Ammonia was set free from these crystals by the addition of hydrate of lime. The inferior layers of snow, which rested upon the ground, contain a quantity decidedly greater than those which formed the surface. It is worthy of observation that the ammonia contained in rain and snow-water possesses an offensive smell of perspiration and animal excrements, a fact which leaves no doubt respecting its origin. Any one may satisfy himself of the evidence of ammonia in rain by simply adding a little sulphuric or muriatic acid to a quantity of rain-water, and evaporating this nearly to dryness in a clear porcelain basin. The ammonia remains in the residue, in combination with the acid employed, and may be detected either by the addition of a little chloride of platinum, or more simply by a little powdered lime, which separates the ammonia, and thus renders its peculiar pungent smell sensible. The sensation which is perceived upon moistening the hand with rain-water, so different from that produced by pure distilled water, and to which the term softness has been vulgarly applied, is also due to the carbonate of ammonia contained in the former."

*We deem it necessary to dwell thus long on the theory of the influence of animal matter in the formatiot of petroleum, as, unless it is promptly disproved, it may prove a most fruitful source of error.

Experiments and observations such as these have again and again been instituted, and always with the same result, always proving that nitrogen exists in the atmosphere only in the state of a carbonate, and never as a simple body. They also show that by fixed law the nitrogen is compelled to unite with another body, in order that it may be available for purposes of reproduction. Were it otherwise, and the nitrogen allowed to dissipate as a simple, we see that there might be danger of interferenee with the great workings of nature, as nitrogen enters into every part of the vegetable economy, and the slightest deviation from the regular law of supply would destroy the harmony of the operations of the vegetable world. The plant takes in nitrogen as carbonate of ammonia, separates and appropriates the carbon and the nitrogen, while the oxygen is given off to be used by man and animals in respiration. Nitrogen thus performs double duty, as it is a means of conveyance for the carbon.

But it may be said, woody material also contains nitrogen; how does it escape in the process of forming petroleum? This question may be easily answered. In the cells of the wood there is excess of hydrogen, and more than sufficient to combine with and carry off the carbon, and as hydrogen is the substance for which nitrogen has the highest affinity, it at all times finds its most desirable companion with which to unite.

But even the laws regulating the distribution of oxygen would be violated were animal matter to be transformed into bitumen.

"The proper, constant and inexhaustible sources of oxygen gas are the tropics and warm climates, when a sky seldom clouded permits the glowing rays of the sun to shine upon an immensely luxuriant vegetation. The temperate and cold zones, where artificial warmth must replace deficient heat of the sun, produce, on the contrary, carbonic acid in superabundance, which is expended in the nutrition of the tropical plants. The same stream of air, which moves by the revolution of the earth from the equator to the poles, brings to us, in its passage from the equator, the oxygen generated there, and carries away the carbonic acid formed during the winter of a temperate climate."

We see that the rapidity of growth of vegetable matter in the temperate zone is not equal to that of the tropics, consequently, as animal and other sources of carbonic acid, exist to a much greater extent in the north than in the south, there is a necessity for some means to carry off the superabundance of that material, and we see that even the winds of heaven are employed as a means of dispersing it, carrying it off in the same volume of air that brings us free oxygen in exchange for the respiration of animals during the period when vegetable growth is checked and the supply of oxygen cut off. In those warm countries showers of rain are infrequent, during which, in our climate, the electricity decomposes the air, and at which time the nitrogen of the atmosphere combines with five atoms of oxygen, forming nitric acid, a source of nitrogen for us independent of that derived from decomposition; but ammonia is the most soluble form in which nitrogen can exist, and as gasses are the principal food of plants, it is in that state best adapted to furnish nitrogen and hydrogen to vegetation; carbonic acid is the substance for which ammonia has a very high affinity, and as this is floating in the air, the ammonia combines with it, forming carbonate of ammonia, which is wafted in company with free carbonic acid to the tropics by the wind, where it exchanges it for a load of free oxygen, with which it returns, and thus the balance of trade is kept up. Now, as nitrogen is absolutely necessary in the formation of all kinds of vegetables used for food, to assist in the formation of the gluten from which the muscles of man are formed, and as the vegetation of warm climates is much more prolific in its growth than in colder ones, owing to the greater amount of sunshine, we see how wise is the provision of the Creator, by which the nitrogen of dead animals is made to assume the gasseous form, in

order that it may be readily transported, and in the most desirable form, from localities where it is in excess to others where it is needed. Were it not for this supply kept up from the north, the vegetation of the south could not proceed with the same rapidity or growth, and supply us with the necessary oxygen to breathe freely, as it now does.

In the tropics, in the absence of free ammonia, the plants have to rely on the nitrates, which are not so soluble and assimilable as the carbonate, and not so well adapted to rapid growth; so that even our supply of oxygen depends upon the rapid decomposition of animal matter, which would be materially interfered with were petroleum formed immediately from it, or, in other words, were the animal matter transformed into bituminous substances.—*American Exchange and Review.*

MINING.

METALLURGICAL INDUSTRY IN BELGIUM.

We give below some interesting details with the help of M. de Lavelaye, a painstaking Belgian statician, with respect to the metallurgical operations of our industrious neighbors. The Belgians having at their command a great quantity of iron, minerals, and coal in profusion, have found themselves placed in a very propitious position for the development of metallurgy. It was only natural, then, that they should have profited from these favorable circumstances for effecting the fabrication of iron on a large scale. The number of blast-furnaces has increased in a very rapid fashion, and at the same time the product of each of them has become more and more considerable. The following table shows the progress of the furnaces engaged in the fabrication of coke-made pig:

Years.	In blast.	Out.	Years.	In blast.	Out.
1845	33	19	1854	55	15
1846	44	13	1855	52	18
1847	50	12	1856	53	17
1848	36	28	1857	49	26
1849	24	41	1858	49	24
1850	25	40	1859	46	29
1851	30	35	1860	43	34
1852	34	33	1861	42	34
1853	46	22			

This table shows that siderurgical industry has experienced very considerable variations. Thus, in 1847, there were 50 furnaces in activity; but the events of 1848 had the effect of reducing by one-half the number of furnaces lighted. Since this period metallurgical industry has regained its activity, and there were, in 1857, 70 blast-furnaces, of which 55 were in activity. This industry is very sensitive to the action of political events; the smallest commercial circumstances exercise immediately a notable influence on the production, and on the value of the products obtained. The total production of coke-made pig has been as follows, year by year:

Year.	Production.	Per furnace per day.
1845	Tons 121,059	10
1846	169,389	10½
1847	222,329	12
1848	142,485	11
1849	134,511	15
1850	131.148	14½
1851	153,819	14
1852	167,993	13
1853	220,403	13
1854	273,182	13½
1855	280,136	14
1856	306,025	15½
1857	287,754	16
1858	312,713	17½
1859	309,170	18½
1860	314,672	20
1861	305,935	20

The great increase in the production per day per furnace, which has been doubled in 15 years, will not escape attention, and we shall now show that the value of the pig made has experienced a very marked reduction per ton:

Year.	Total.	Per ton.	Year.	Total.	Per ton.
1845	£508,448	£4 4 0	1854	£1,250,081	£4 11 3
1846	880,823	5 4 0	1855	1,276,300	4 11 3
1847	1,023,113	4 12 0	1856	1,334,751	4 8 9
1848	512,946	3 12 0	1857	1,169,404	4 0 9
1849	446,577	3 6 5	1858	1,157,038	3 13 7
1850	393,444	3 0 0	1859	1,041,408	3 7 3
1851	477,641	3 1 8	1860	1,024.572	3 4 9
1852	535,160	3 4 0	1861	974,563	3 3 1
1853	876,730	4 0 0			

The fluctuations indicated are rapid and sudden, the value of the pig produced having exceeded £1,000,000 in 1847, while three years later it had sunk below £400,000. The capital engaged in this industry being nearly fixed, while the revenue acquired varies so greatly, it may be readily conceived that considerable fluctuations arise in the dividends of the numerous companies engaged in metallurgical pursuits. Coke has in a great degree replaced charcoal in the production of pig; thus of 23 charcoal-worked furnaces which were lighted in 1845, only six were in blast at the end of 1861. The production of rolled iron and pieces of machinery follows closely the production of pig. The official expose of the situation of Belgium affords precise data in this regard. Nature has not confined her bounty to Belgium by giving her an abundant quantity of coal and iron; she has also endowed her with calamines or zinc minerals, lead, pyrites of iron, alum schists, marble in profusion, stone, and mineral products used in various manufactures. The various products of the metallurgical works of Belgium, taken en masse, amounted in 1838 to a sum of £2,080,000, while in 1860 these same products reached an aggregate of nearly £5,200,000. As affording another proof of the general progress of industry in Belgium, we may append the number and collective force of the steam engines employed in Belgian colleries, metallic mines, forges, &c., in 1838 and 1860:

1838—Engines.		Horse-power.
Colleries	376	15,604
Metallic mines	7	94
Forges, &c.	52	1,828
Metal works	45	1,165
Machine works	56	553
1860—Engines.		**Horse power.**
Colleries	999	48,088
Metallic mines	124	4,029
Forges, &c.	245	7,248
Metal works	215	5,245
Machine works	341	2,781

The total collective force of the steam-engines in Belgium including locomotives, was, 1838, 25,312 horses, while at the end of 1860, this total had risen to 161,809 horses. We may readily infer, after these figures, the gigantic advance which Belgian industry has made.—*London Mining Journal.*

THE MINERAL WEALTH OF TURKEY.

An exceedingly interesting article has just appeared from the pen of Mons. E. Dalloz, on the minerrl wealth of Turkey. The Ottomon empire comprises rich mineral bearings of every kind, but it is especially metalliferous minerals which abound in it. Independently of the auriferous sands over which roll the greater part of the rivers of Bulgaria, Servia, and Wallachia, explorers have found—more particularly in the Slavonic and Greek mountains—mines of iron, copper, lead, and silver; but the apathy of the Turks is proverbial, and it is in vain that Nature has thus shown herself prodigal towards them, as they work scarcely one-twentieth part of the metallic bearings which they possess, while those which have been attacked are only worked very badly. The Koran embodies a great truth when it says—"Labor, art, and industry guarantee man from necessity." But the Turks have never shown a very great readiness to obey and act on this precept of the prophet, but have rather sought to establish by the scimitar the reign of Islam. First, with regard to mineral combustible, M. Lame-Fleury indicates the existence of important bearings of coal in Albania and the presence of lignite in Roumelia, near Rodosto, and the Isle of Candia. The existence has been recognised, besides, of a powerful bearing of lignite at Domous Dere, on the European shore of the Black Sea, about four leagues from its embouchure into the Bosphorus; but the richest carboniferous basin of Turkey is that of Eregli (the ancient town of Heraclea,) in Asia Minor; the combustible mineral there presents itself in a state of coal. The colleries of Eregli extend along the littoral of Anatolia over a band of earth 90 miles long and 6 miles broad. There were recently in this district 40 centres of extraction in activity, employing 200 Slavonian or Croatian miners, besides several hundred men engaged in transport arrangements, &c., and producing an annual average of 200,000 tuns of coal per annum. The principal working is at Zougourda, at a small distance from the sea; but as at Zougourda there is only a bad shore, which ships cannot approach in bad weather, the central depot for combustible has been established at Eregli, situated some 25 miles more the west. To the north-east of Servia, a Danubian province submitted to the sovereignty of the Sublime Porte, are the Dobra Collieries, on the shores of the Danube; these colleries have an extent of 14,000 acres and have been recently conceded to the Franco-Servian Government. According to a note published by this company the Dobra Collieries, the beds of which brought into working have a power of 48 in. to 60 in., furnish, at a return price of 4s. 2d. per ton, a rich long-flamed coal, capable of sustaining a comparison with the best English coal, and the extraction of which might be effected at the rate of 150 tuns per day. The same note adds that the Dobra Colleries are situated so near the Danube that the first gallery opens out at a distance of 40 feet, the second at 800 feet, and the third at 1600 ft. from the river. An important quantity of English coal is imported into Turkey, the deliveries from Great Britain into the Ottoman empire in 1858 having amounted to 190,607 tuns. We shall take an early opportunity of recurring to the mineral wealth which the lazy Turks either wholly neglect or are allowing foreigners to utilise. The two levers which are required to raise Turkey from her present unsatisfactory state are constitutional liberty and well-ordered enterprise. But when will the sick man ever enjoy these blessings? —*London Mining Journal.*

MINING IN NEW ZEALAND.

The Otea Copper Mining Company have issued a report of the directors to accompany the notice that a call of 5s. per share has been made. The mine has already yielded 30,000*l.* worth of copper ore, with very inadequate machinery, and Capt. Holman reports that there is proof shown by the deeper explorations that the ores are not merely superficial, but it is a vein that will evidently continue in depth; and if only a permanent increase in the yield of ores takes place throughout the vein, such as seen in the 12 fm. level, where the quality of the ores is quite equal to the general shipments, the future value of the mine would be very great: and whatever course of action is determined on by the company, the mine fully warrants an extended trial. The directors remind the shareholders that Captain Holman (who has no connection with the company,) is one of the ablest and most trustworthy practical authorities. They have, therefore, good reason for anticipating considerable returns and profits soon after everything is in working order.

NEW MINING COMPANY LAW IN AUSTRALIA.

A bill of much importance to the mining community has been introduced into the Adelaide Assembly, by Mr. Neales, the object being not only to secure limited liability to public companies, but also to introduce the admirable principle of anonymous partnerships, so well known on the Continent. There can be no doubt that there are a vast number of useful enterprises which would be developed, and yield large profits, could capitalists invest upon the principle of the *société anonyme.* That there is more security to the creditors of a company keeping a register of shareholders than of an anonyme company cannot be shown, since according to the law at present in force in England there is nothing to prevent the full nominal value of the shares being called up, when the responsibility of the shareholder to the entirely ceases, so that it must be immater

creditor whether his name be known or not. It is to be hoped that the anonyme system will hereafter be introduced both in Australia and in England. Mr. Neale's bill proposed to authorise the promoters of companies "to issue shares on which the full amount of capital represented by such shares has been paid, entitling the holder, who need not be named in such share, to all the rights and advantages of a shareholder; and in such atter case some distinguishing mark or number shall be made on such share, and such mark or number shall be substituted for the name of the shareholder in the list hereinbefore required to be kept by the manager, and supplied to the registrar of joint-stock companies;" and in another clause it was provided that any meeting of the company the holders of anonymous shares who might have deposited their shares with the manager at least three days prior to any such meeting might vote in respect of such shares in the same proportion as other shareholders; and the manager, on such share being deposited, would be required to give a receipt and voting-paper for the shares, specifying the number so deposited, and should return such shares on deman'. To such provisions we cannot see any possible objection, whilst the encouragement which would be given to the development of enterprise would be incalculable. As Mr. Strangways very truly observed, such an investment would not differ from a man's keeping his money in bank notes, and placing them up a chimney. So far as the general body of creditors are concerned the cases would be alike.—*London Artisan.*

LARGE INCREASE IN THE ENGLISH EXPORTS OF COAL.

During the past month there has been a good business doing in the export coal trade at the various ports of the kingdom, with the exception of the northern ports, and there has been an increase of 71,569 tuns in the exports as compared with those during the corresponding period of 1863. From January to August inclusive, of the present year, the total export of coal from all the ports amounted to 5,263,403 tuns, showing an increase of no less than 327,698 tuns, as compared with the corresponding period of 1863. The exports for the month of August from Hull, Grimsby, and Goole, amounted to 39,356 tuns, showing an increase, as compared with the corresponding month of last year, of 10,889 tuns; from Liverpool 67,333 tuns, increase 19,773 tuns; from Bristol, Cardiff, Swansea, Newport, Llanelly, Port Talbot, Neath, and St, David's 237,005 tuns, increase 47,069 tuns; and from Glasgow, Port Glasgow, Greenock, Grangemouth, Alloa, Borrowstoness, Troon, Ardrossan, and Inverkeithing, 61,078 tuns, increase 1390 tuns. From Newcastle, Shields, Blyth, Amble, Sunderland, Seaham, Hartlepool, Stockton, Middlesboro', Whitehaven, and Maryport, there was a decrease of 7552 tuns, the export being only 379,404 tuns. The chief markets during the present year which show a remarkable improvement are the following: The exports to France during the year show an increase of 84,744 tuns in the first eight months, as compared with the corresponding period of 1863; to Italy the extraordinary increase of 117,527 tuns; to Spain 18,839 tuns; to the Mediterranean 75,141 tuns; to Africa an increase of no less than 154,661 tuns; to the West Indies an increase of 128,567 tuns; to Turkey an increase of 19,743 tuns; and to Austria an increase of 26,003 tuns. During the first eight months of the present year the exports to Prussia, as compared with the corresponding period of 1863, show a decrease of no less than 187,985 tuns, and there is also a considerable falling off in the exports to Denmark: this is in a great measure owing to the war. The only other markets which show a material decline are the North American, which indicates a decrease of 71,482 tuns, and the East Indian, showing a decrease of 56,805 tuns. The exports to Germany, Holland, and the Channel Islands, show a small diminution, but it is not necessary to go into particulars, as the amount involved is so small.—*London Mining Journal.*

Native silver, in greater quantities than the general public is aware of has for many years been found in the copper mines of Lake Superior.

THE LONDON COAL TRADE.

For the month of August just ended, 443,852 tuns 13 cwt. of coal were entered the metropolis per railway, canal, and seaborne as against 414,233 tuns 16 cwt. for the same month of 1863. The seaborne arrivals were in the following proportions: Newcastle, 103,404 tuns in 211 ships; Seaham, 10,343 tuns in 46 ships; Sunderland, 78,674 tuns in 187 ships; Middlesborough, 6,185 tuns in 25 ships; Hartlepool and West Hartlepool, 43,285 tuns in 162 ships: Blyth, 524 tons in two ships; Scotch, 1,967 tuns in 16 ships; Welsh, 11,151 tuns in 28 ships; Yorkshire, 1,302 tuns in 16 ships; 3,763 tuns small coal in 7 ships, and 612 tuns cinders in 6 ships. Of this large tonnage 121,595 tuns are various sorts of Wallsend, 23,879 tuns are gas, and 8,799 tuns steam coal. The railways have brought the undermentioned tuns: London and North Western, 82,094 tuns 5 cwt.; Great Northern, 54,777 tuns; Great Western, 20,232 tuns; Great Eastern, 12,602 tuns 12 cwt.; Midland, 8,347 tuns 17 cwt. to the St. Pancras depot, and 1,395 tuns 2 cwt. to the King's-cross coal station; South-Western, 1,567 tuns 15 cwt.; London, Chatham, and Dover, 205 tuns 12 cwt.; and Tilbury and Southend, 30 tuns, making a total of 181,242 tuns 3 cwt., against 142,110 tuns 17 cwt. for August, 1863. Of this weight 11,000 tuns was of the Silkstone qualities; 15,635 tuns from the Clay-cross pits, near Chesterfield, and 3,559 tuns of coke. For the eight months of the present year the entries have been—by railway, 1,497,434 tuns 13 cwt., against 1,069,655 tuns 18 cwt., showing an increase of 427,778 tuns 15 cwt. The canal supply has declined from 6,593 tuns 5 cwt. for the first eight months of 1863, to 6,261 tuns for the present year. The seaborne coal entered for the same period was 2,117,648 tuns in 5,738 ships, against 2,109,107 in 2,264 ships for the corresponding months of last year, showing an increase in the tonnage of 8,541 tuns, but a decline in the number of ships of 526. The total tonnage for the present year, from all sources, has been 3,621,343 tuns 13 cwt., against 3,185,355 tuns 18 cwt. from the 1st of January to the 31st of August, 1863.

GAS.

ON A NEW METHOD OF GAS-ANALYSIS.

By A. W. Williamson, F.R.S., and W. J. Russel, Ph. D.

(*Continued from our last.*)

To the end of the central tube is fastened a piece of thick barometer tubing. The joining is best made by grinding the end of the barometer tube to a conical form, so that it may be forced up the bore of the caoutchouc tube. Before doing this, melted gutta percha should be dropped on the end of the glass tube, and after binding the tube on as firmly as possible with iron wire, more gutta percha may be melted round the end of it, so as to render the joint as perfect as possible. The united length of these two tubes should be about 30in. The flow of mercury through the tubes is regulated by the following contrivance: at the lower end of the glass tube, a short piece of thick cabutchouc tube is bound firmly on and extends about 1¼in. beyond the end of the glass tube. A clamp for regulating the flow of mercury from the reservoir, similar in principal to the one before mentioned, passes across this piece of tubing, and, by tightly compressing it, prevents any mercury from passing through. It would, however, to say the least of it, be an exceedingly inconvenient arrangement if it were necessary for the operator to stoop down every time it was required to open or close this clamp. To avoid this, we use a strong pair of crucible tongs for a clamp. The only addition they require is a rod with a screw and nut fastened to one arm, a slot in the other, an arrangement precisely similar to that with the other clamp. The flexible tube is placed between the jaws of the tongs meant to clasp the crucible, and by opening or closing the other ends, we regulate the flow of the mercury. The tongs must, of course, be firmly held in one position, so that no strain shall come upon the suction tube. This is easily done by binding them to a support fixed in the floor. We have now all that is required for effecting the transfer of the gas between the eudiometer and the laboratory vessel. By opening the clamp compressing the tube from the reservoir, and retaining the clamp at the bottom of the suction tube closed, the gas is forced out of the laboratory vessel into the eudiometer; and by depressing the eudiometer until the top of it touches the end of the syphon tube, and then opening the clamp at the end of the suction-tube, the gas is forced along the syphon into the laboratory vessel. The end of the syphon tube, which is within the eudiometer, should be rounded, every particle of the gas can then be withdrawn from the tube.

It will readily be seen that this way of filling the eudiometer with mercury is not only simple, but accomplishes the end very satisfactorily; for the air being drawn out from the top of the eudiometer, the mercury rises gradually and regularly, the consequence of which is that no bubbles of air remain adhering to the tube, as they are apt to do when it is filled in the ordinary way. Owing to the elasticity of the syphon tube, and the upward pressure of the mercury, there is no fear of injuring the eudiometer by pressing it down till the syphon tube touches the top of it. In order that no bubble of gas may remain adhering to the syphon tube when the eudiometer is raised, the syphon should be struck once or twice with the end of the eudiometer as it is being lifted up.

While engaged in working out and perfecting this method of transfer of the gas, we have observed several interesting and important facts, which may be briefly mentioned. First, with regard to the imperfection of the joint made by pressing the laboratory vessel down upon the caoutchouc pad. It will be evident that by means of the screws on the rods, and the large nuts, the laboratory vessel can be pressed down with very considerable force. Besides this, the vessel is surrounded, both inside and out, with mercury to a height of one or two inches, but these precautions are not sufficient to prevent air passing into the laboratory vessel, when a vacuum is formed there. In the experiments made to test whether the vacuum remained perfect, or what amount of leakage took place, the flow of mercury through the syphon tube was prevented by slipping an india rubber cap over the end of the syphon, the eudiometer, of course, being removed. By this means it could be ascertained whether any leakage of air occured after several hours, and even after several days. The mere pressing, however strongly of the laboratory vessel down upon the pad, and surrounding it with mercury, were insufficient to retain a vacuum; in fact, the air can then enter with considerable rapidity, and is seen to bubble up into the laboratory vessel. The amount of leakage under these circumstances far exceeded what we had [illegible]cipaIt evidently arises from the want of contact between the mercury and the glass. A layer of air remains adhering to the glass both inside and out. When it is plunged into the mercury, there is thus a continuous chain of particles of air extending from the vacuum to the level of the mercury outside. The pressing of the vessel on the pad does not produce sufficiently close contact between the glass and caoutchouc to prevent the gradual movement of this layer of air, so that as the particles at one end of it pass up into thevacuum, others are drawn in from the surrounding air, and pass gradually along. By a very simple proceeding we are, however, able to prevent any appreciable error from leakage arising in this way; for it is only necessary to moisten the surface of the pad with water, or a dilute solution of corrosive sublimate, before covering it with mercury, and to fill with water the small hollow round the laboratory vessel produced by the expulsion of the mercury by the glass. When these precautions are taken, and other sources of error to which we shall immediately allude are eliminated, we are able to retain in the laboratory vessel an all but perfect vacuum; a vacuum, it is believed, far exceeding that obtained by any other means of this kind. In fact, if a vacuum be retained for twenty-four hours in the laboratory vessel, it will be found that the air which has entered, when reduced to atmospheric pressure, does not occu-

py a space much larger than that of a large pin's head; and it is probable that this small bubble of air has diffused through the water into the vacuum.

For some time after this method of passing the gas between the laboratory vessel and eudiometer as first adopted, we used the flexible tube and reservoir, both for increasing and diminishing the pressure on the laboratory vessel. To do this, it was only necessary to raise and lower the reservoir, which is easily done by means of a cord passing over a pulley; this would have rendered unnecessary the second or glass tube connected with pad, and there would have been no occasion for the transfer of mercury from one vessel to another. We were, however, obliged to abandon this method, after making numerous experiments on the subject, for the simple reason that it was impossible to obtain any flexible tube perfectly air tight. Tubes of several kinds were made on purpose for these experiments; some were made with a small bore and composed of three or four layers of the best india rubber, very carefully joined, so as to form one thick tube which was slightly vulcanised. Mr. Siemens was good enough to make us a tube of non-vulcanised india rubber, the joinings in which were united by his machine. Painting the tubes over with a solution of india rubber or gutta percha in benzol, while a vacuum existed in the laboratory vessel, was tried, but without success. With by far the greater number of the tubes used, the amount of leakage was very small, and when the apparatus is in use, the vacuum, or a near approach to it, instead of being retained for many hours, as was the case in these experiment, only continues for a few seconds; still as the small quantities of air thus drawn in might accumulate in the tube, and then rise into the laboratory vessel, we consider it a sufficient reason for abandoning this plan for varying the pressure. Several methods were tried in which an intermediate vessel was used for collecting any air sucked into the tube; but this addition rendered the apparatus more complicated, and did not altogether give satisfactory results. With the glass tube adopted there is perfect freedom from leakage, and it adds but little to the size of the apparatus or to the trouble in manipulating.

(CONCLUDED IN OUR NEXT.)

CARBONISATION OF ILLUMINATING GAS.—The advantages resulting to gas consumers from the carburisation of the gas supplied by the companies has now become generally recognised, and the apparatus for effecting the thorough mixture of the benzole or naphtha vapour with the gas has now been so simplified that whatever objections may formerly have existed have been entirely removed, so that it may be hoped Dr. Knapp's observation, as the discovery being of benefit to individuals only, will no longer apply. Referring to naphthalised gas (and it may here be mentioned that the carburisation is always effected with mineral naphtha, benzole, or some other material not widely different from them), Dr. Knapp, in his well-known "Technology," observed that "the illuminating power of gas is very much increased by the presence of volatile hydrocarbons, and many years ago Mr Lowe introduced, or rather proposed, a plan for saturating inferior qualities, or ordinary coal gas, with naphtha, or the spirit distilled from coal tar, and thus augmenting its illuminating power nearly one-half. The remarkable increase of light, however, produced by naphthalised gas frightened the gas companies, who foresaw nothing but ruin in the diminished quantity of gas which would necessarily be consumned for the production of an equal amount of light. Cold water was consequently thrown upon the project, and the invention has only been of benefit to individuals, and not to the public at large, which might have been the case had it been introduced upon a large scale." Since this opinion was expressed other inventors have been more successful than Mr. Lowe, and there is no reason why the benefits of a rich, pure, and economical light could not be generally diffused, we have this week examined the improved carboniser, known as Woodward's Patent Gas Improver and Carboniser, and the results produced are certainly all that could be desired. In this apparatus the gas is made to pass over the surface of benzole or mineral naphtha, receiving its vapour and obtaining a vastly increased illuminating power. It is claimed that in passing over the surface of the fluid the gas comes into contact only with the amount necessary for its purification, so that the vitality of the spirit is retained until it is all consumed. Dr. Muspratt has reported very favorably upon the invention, and photometric experiments have proved that, taking gas at 4s. 6d. per 1000 cubic ft., there is a saving of more than one third, the same amount of light being obtained for 2s. 11d. The apparatus is at present in use in some hundred manufactories, printing offices, &c., and a large number of testimonials of its efficiency have been obtained.—*English Paper.*

NEW GAS-LIGHTING APPARATUS.

Mr. T. C. Eddy and Mr. M. Burdon, of Durham, have brought out an apparatus for lighting gas, intended to obviate the necessity of its being done by hand. It is called the "Eelectro-magnetic gas-lighting apparatus." The invention may be applied to any description of gas-lamp without their requiring alteration. The apparatus is about three times the size of a lady's thimble, and very much like an ordinary gas-burner. The principles upon which it is based are stated as follows: An ordinary telegraph wire communicating with the negative pole of a galvanic battery is connected with the "Electro-Magnetic Burners" in succession, according to the number of lights required, and the extremity of the wire communicates with the earth, or is conducted back to the battery, and attached to the positive pole, when the circuit is complete. Therefore, to light and extinguish the lights, it is only requisite to connect or disconnect one of the poles of the battery. Immediately the electric current enters the "Electro Magnetic Burner," it passes through an insulated wire, which is lapped round a soft iron tube, which immediately becomes a powerful magnet, and attracts a piece of soft iron, which opens a kind of valve, and permits the gas to escape through the burner: at the same time the gas valve is opened, the current passes through a piece of platinum wire close to the burner, which turns red hot and lights the gas. This effect is produced at every burner at the same instant.—*London Builder.*

GAS IN ENGLAND.

THE MANCHESTER CORPORATION have resolved to reduce the price of gas, within the city, from 3s. 6d. to 3s. 2d., large consumers paying a trifle less, and consumers beyond the city a higher rate. A profit of nearly £60,000 was made last year, and of this sum about £28,000 will be devoted to improvement purposes.

THE WEST HAM GAS COMPANY have declared a dividend of 4 per cent. for the six months ending 30th June last, in addition to ½ per cent to make up for deposit dividends previously paid by the company. The report states that, during the past six months, three millions of cubic feet of gas had been consumned more than in the corresponding period in 1863. The new offices are now nearly completed.

THE SHERBONE GAS COMPANY.—The annual meeting of this company has been held for the first time in the company's own building. Although the report shows a profit of £468, and a 7½ dividend absorbed only £300, the report is not so favorable as last year. The balance of profit and loss, however, was so large last year, that £1,000 were transferred to capital account, new shares to that amount being distributed among the proprietors. The usual dividend of 7½ per cent. was declared on both old and new shares, and a balance of nearly £100 will then be carried over. The company are laying down a new main, and having announced a reduction in the price of gas from 6s. 3d. to 5s. 10d. per 1,000, with a discount of 10*d.* per 1,000 off for cash.

THE HANLEY GAS CONSUMERS' COMPANY (LIMITED) are making progress towards the establishment of gas works.

THE MALVERN LINK GAS COMPANY have declared a dividend of 5 per cent. for the last half-year, carrying over £150 2s. 5d. to the credit of the company.

GAS.—It is stated in the Star newspaper, that the metropolitan gas consumers may shortly expect a general reduction in the price of gas, under the provisions of the Metropolis Gas Act, 1860; most of the thirteen London gas companies, having, by the saving in expense of working, arrived at so good a financial state as to render a reduction in price imperative, under the provisions of the Act. It is generally understood, that had the several metropolitan vestries put the Act in force, this reduction must have been made a year ago.—The accounts of the thirteen metropolitan gas companies presented to Parliament, in persuance of the Metropolis Gas Act, 1860, show a total capital subscribed and borrowed of 5,684,987*l.*, upon which interest and dividends were paid amounting to 585,679*l.*, —a total result in excess of 10 per cent. The capital subscribed, exclusive of borrowed, is 5,015,562*l.*, upon which 531,227*l.*—nearer 11 per cent. than 10—was paid; but the accounts also show a total of 147,000*l.* in reserve, not carried to dividend. Herein the public are deeply wronged, as it shows an excess of 12 per cent. earned, upon which an immediate reduction in price ought to have taken place. It is understood that the whole of the companies continue to act in concert. The formation of a consumers' association to enforce action from vestries and companies is urged by "A Large Consumer," in the paper named. He says he has no doubt that an examination of the accounts would show that the public are now paying 200,000*l.* per annum in excess of the price authorised by Parliament solely through the supineness of the vestries.—The new lease recently granted by the Board of Health to the Newbury Gas Company, now comes into operation, and henceforth the price of gas to local private consumers will be reduced from 7s. to 5s. 6d. per 1,000 cubic feet. There will also be a reduction in the public lighting.—The price of gas in Ashton being 4s., and that of Manchester 3s. 2d., with a prospect of its further reduction in a few years to 2s. 6d., dissatisfaction with the price at Ashton is manifesting itself, and some remarks on the subject have been made in the town council.—The reduction in price by the Birmingham Gaslight and Coke Company has been followed by an increase in consumption; but, from Parliamentary expenses and other reasons, the legal maximum dividends, though they will be paid this year as usual, require aid from the reserve fund on this occasion.

SODA IN COAL GAS.—On examining the flame of the gas supplied in Munich, Professor Nogel remarked a pale soda line which was not observed when the gas was passed through sulphuric acid. On analysing afterwards the deposit on the surface of a copper burner which had been in use a year, the Professor found a considerable proportion of sulphate of soda.

CRYSTAL PALACE DISTRICT GAS COMPANY.

The report of this company states that the works and plant were in good order, and that the new gas-holder was progressing satisfactorily. A further reduction would be made in the price of gas from the 1st of January next to 4s. 6d. per thousand cubic feet The balance sheet for the half-year to the 30th of June. last showed the profits for the half-year to be £3,710, which, with £216 balance from the preceding half-year, made £3,926, out of which the directors recommended a dividend of 6 per cent. per annum on the preference capital, and of 10 per cent. per annum on the ordinary shares. The total paid-up capital was £126,714, leaving, after expenditure, £6,261.

We give below the remarks of the Chairman, Erasmus Wilson, Esq., F. R. S., and commend them to our readers.

THE CHAIRMAN: Gentlemen, when a company is successful, the duties of a chairman at their regular annual or half-yearly meeting are very light, as mine are on the present occasion. As we have reported to you, we have gone on, as usual, in the most satisfacto-

ry manner; and occupying the position which we do, and surrounded by a new neighborhood, and one which is growing every day, it is necessary we should keep pace with the advancement which is taking place in the district. We effected all that is required for the supply of the district up to the present time, and we are prepared with the means of carrying that supply to any extent which may be required for the beautiful district round the Crystal Palace, however many years the progress now going on there may continue. If any of the shareholders have done us the favor to visit the works of late they will have seen the progress which is being made in the erection of the new gasholder, and have seen also the planning of the ground which is being prepared for the increased size of the retort house, and all those appliances which belong to a gas-company. If any of the shareholders happen to be inhabitants of the district, or at heads of families and have young children, I trust that in that very healthy neighborhood they have been free from the plague of whooping-cough which has been so tiresome amongst children. We have lately assumed somewhat of a new character, for instead of invalids going to the spas at the present time, or even to the sea side, they come to the gas works to inhale the fumes which are given off from the purifying machine during the changes of the apparatus. People are very much in the habit of turning up their noses at gas—I mean at the smell of gas—fancying there must be something dreadfully injurious to health simply because the smell is not quite so pleasant as eau de cologne; but I have heard of a young lady who always takes the opportunity of walking into those streets in London where the pipes are being taken up because she enjoys the odour, (A laugh.) I do not think I should agree with that, for the after odour of some things cease to be pleasant after being shut up for a length of time—a carouse over port wine may be pleasant at night, but the fumes are excessively disagreeable next morning. But in truth, in reference to gas manufacture, I believe there is no more healthy manufacture in existence, and it is satisfactory to the shareholders, when they put their 10 per cent. into their pockets, to feel that it has not been earned by any injury to the health of the workers in the manufactory; on the contrary, if invalid shareholders wish to get into good health I am satisfied that a little practice, and a little training in the retort house for a short period of time would put them into that good health. It is a curious observation which has been made by some physician in Germany, that the fumes which are given off by the purifiers at the gas works during the change, and which we consider so disagreeable, and which is the most detestable part of our operations, are found to have a healthy effect upon the mucuous membrane of the air tubes, and to be as powerful for the cure of whooping-cough as a change to the sea-side. But, so it is, and our purifiers are visited daily by several children, who come for the purpose of inhaling these health-giving fumes. The secretary reminds me that our foreman has succeeded in effecting several admirable cures—I trust that he will not follow the example of Holloway, and advertise these cures to the world. (A laugh.) But it is pleasing to know sometimes that good does come out of evil, as it does in the present instance. Well, gentlemen, in connection with our progress in the perfections of our plans and apparatus, we have also to add the very satisfactory fact of our being in a position to reduce the price of gas throughout the district. When it is remembered that we are an extra metropolitan district, that we are in the suburbs of London, almost in the country, that we have many engineering difficulties to contend with to carry gas up hill and down hill, with a considerable pressure to equalise the gas, and other circumstances, it is very gratifying to know that we are able to reduce the prise, almost to a rate scacely above that of the metropolis itself. (Hear, hear.) Our difference will be seen in a moment when it is remembered that for every yard of gas pipe in the metropolis services are given off, whereas in ours you have distances somtimes of half a mile with only a single service. The price of gas, from the first of January next, will be 4s. 9d. per 1,000 cubic feet, and we hope in a short time to be able to rednce it to a lower price than that. I have no more remarks to make, but shall be happy to hear any from any shareholder. I now propose that this report of the directors be received and adopted by the meeting, and entered upon the minutes as the record of this half-year.

WATER.

17TH REPORT OF THE BOARD OF WATER COMMISSIONERS OF JERSEY CITY.

OFFICE OF THE WATER COMMISSIONERS,
Jersey City, July 1st, 1864.

To the Honorable the Mayor and Common Council of Jersey City:

Gentlemen,—In pursuance of the Supplement to the Water Acts, passed by the Legislature, and approved March 17th, 1862, the Board of Water Commissioners respectfully report to your honorable body the condition and state of the works during the year ending June 30th, 1864.

During the year, the 36-inch main pipe has been finished from the easterly bank of the Hackensack river to the Bergen reservoir, thus completing the new main—with the exception of crossing the Hackensack river. As far as human skill and foresight can determine, we believe that the work has been permanently and faithfully done. After three years spent by the board in investigation as to the cheapest and most permanent way, comparatively, of conducting the new main over the Hackensack river, we have decided to build a bridge on a straight line, of sufficient size to carry both lines of main pipe.

The work has been contracted for, and is now progressing; and if no unforseen delay is met with, it will be completed before winter.

It may not be out of place to detail the means which caused the board to adopt this plan.

Three ways of crossing the river were proposed.

1st. By a tunnel, to be constructed under the bed of the river.

2d. By submerging a pipe upon the bottom.

3d. By building a substantial wooden bridge, with syphons placed low enough to allow vessels to pass over them.

By the first plan, however desirable it might be, the uncertainty of cost deterred us from entering upon the work.

Under the second plan, it was contemplated to sink a pipe and allow it to rest upon the bottom of the river.

The commissioners have seen that a pipe in the new 36-inch main burst under a pressure of 70 pounds to the square inch, although having stood a trial pressure of 300 pounds; and as such an accident is liable to happen to a pipe in the submerged main at any time, and as such an event would render the whole submerged part useless, it was considered, therefore, too great a risk to run.

The submerged part would probably have cost at this time about $100,000.

The bridge will be safe; and in case of leak, it will be at once discovered and stopped.

The cost of the structure, including the main pipe and two syphons, will be nearly $50,000.

In case of leak or injury to the syphons, they can be taken out and repaired, and replaced with small cost.

Such a bridge—with trifling repairs—should last twenty-five years.

As was anticipated in the preceeding report of the commissioners, the 36-inch and 20-inch pipes have been connected on the west side of the Hackensack river; and by the report to the board of R. C. Bacot, Esq., superintendent and engineer of the works, it will be seen that the supply delivered at the Bergen reservoir has been increased about 1,000,000 gallons per day.

Without this additional supply, the board would have been compelled to reduce the consumption of water used by the manufactories, or else cut off a portion of the water required for a full supply of Hoboken and Hudson City.

Happily that painful necessity has been obviated, and there is now no probability of a recurrence of such a crisis.

The superintendent's report also discloses the fact, that for each pound of coal used for generating steam 450,000 pounds of water was raised one foot high.

By the report to the Board of G. S. Boice, Esq, registrar, a full and clear exhibit appears of the condition of our financial affairs.

The total amount of revenue received during the year was $109,808,79.

The amount expended was $104,135,88, showing a surplus of receipts over expenditures of $5,672,91. But in consequence of the deficiency made during the previous year, nothing could be added to the sinking fund.

The amount of deficiency still remaining is $2,666,03.

We hope that during the coming year, the amount may be made up.

The estimated income for the next year, to be derived from the sale of Passaic water, is $120,000 00.

The estimated expenditure for repairs, interest and management for the coming year, is $120,000,00.

The board can but look upon the year last past as an exceedingly unfortunate one as regards accidents to the works. Twice during that time serious and unexpected accidents have happened to the Jersey City pumping engine, and the lining to the east bank of the Belleville reservoir fell in, carrying with it nearly one third of the earth of the heavy embankment.

The accidents to the engine have cost about $11,000,-00, and the cost of repairing the reservoir will probably amount to $12,000,00 more, making the extraordinary sum of $23,000,00 to be added to our account for repairs during the year next to come.

The accidents to the engine, in the opinion of the commissioners, were not owing to negligence or carelessness of the employees of the board, but from defects in the materials used in its construction.

In proof of which we have the fact, that the West Point engine performed more service without accident of any nature.

Mr. Wm. Birbeck, the contractor for the construction of the Jersey City engine, died while it was building, from which cause, undoubtedly, insufficient attention was paid to it.

When the 20-inch main was laid, the syphon was enlarged to 24 inches, while the pipe beyond the river was reduced to 20 inches in diameter, by which, together with 4 right angular curves, it appears by applying a pressure guage a head of 12 feet in height is lost.

Consequently, the syphon on the 36-inch main will be made of the same size as the main.

In consequence of the advance in the price of labor, fuel and supplies, the board feel that they will soon be obliged to increase the price of measured water.

At the present rate consumers are not paying the cost of pumping.

While deprecating the policy of increasing the rate of measured water any higher than will be absolutely remunerative, the board believes that justice to the tax payers of Jersey City require the advance to be made.

When the cost of fuel, etc., declines, we shall at once reduce the rate correspondingly.

We feel convinced that the best interests of the city will always be subserved by fostering the manufacturing and commercial interests.

An abundance of water, at a cheap rate, is a necessity to those classes. Our citizens are benefited by inducing as many as possible to locate in our city.

The metre system has been extended during the year, and we are clear in the belief that without it we should not have water enough to supply the city, without great exertions.

It is, however, apparent to us that a large amount of water is wasted, enough, probably, could we derive a revenue from it, to show a handsome surplus on our income for the year.

Were we able to procure a metre which, with accuracy, would combine permanence without liability to

get out of repair, at a price of about $10 to $15 each, the desideratum would be gained.

Wherever placed, sentinel like, they stand guard: no water passes unless it is accounted for, and if waste takes place, the careless must pay for the negligence. As it now stands, the persons who use the water prudently, or otherwise, pay alike: a result unjust and unreasonable. With all due scrutiny exercised on the part of the board and its officers, only a part of the waste can be prevented.

The present time is a very trying one for all water-works, especially those which gain their supply by pumping. The cost of all repairs, fuel, and the wages of laborers and employees being quite double the rates formerly paid, without there being any corresponding advance in the revenue, must preclude the hope—so far as our works are concerned—of making any material addition to the sinking fund until matters resume their original position.

While contemplating this subject we feel it our duty to again call the attention of your honoroble body to the matter of water rents now past due from the city to the water commissioners. There is now due for 1861, 1862, 1863 and 1864, the sum of $9,658.05.

The faith of the city is pledged to each bond-holder that all of the rents and profits, after payment of expenses, shall be applied towards a fund for the redemption of the bonds: in other words, a sinking fund.

The law expressly says that no water shall be given away by the water commissioners.

It is plain that each individual in the city is bound to pay a water rent; then, for what reason the whole seek to be relieved it is hard to conceive.

Unless the city authorities pay the amount, it will be the imperative duty of the board of water commissioners to take measures to enforce the payment.

It is held by some that the city ought not to pay water rents until the amount advanced by them is repaid by the water commissioners.

If there is any law which will permit the board to make such a compromise, they would be very glad to arrange the matter in that way; and then, after the debt is paid, there could be no further question in the matter,

But until such authority can be found or obtained the board must insist upon payment.

Should prices continue to advance for another year as they have done during the last one, however painful the conclusion is to contemplate, the fact must be met and an advance must take place in the water rents.

We sincerely hope the necessity for such an advance will not arise.

Under such circumstances the undertaking of any extension to the works, which can in any-wise be postponed, would be most unwise.

The board will finish the work on hand in a proper and permanent manner, expending thereafter only so much as will be necessary to make repairs or extensions which cannot be dispensed with.

Economy in the management of all public works is safety; on the contrary, extravagance is bankruptcy.

The second supply main from the Bergen reservoir through Bergenwood and Newark avenues, also the connection of the 36-inch main around the Belleville reservoir, from the rising main to the gate house, have been completed during the year, thereby affording additional security against the contingency of depending upon one line of pipe or piece of machinery for a continuance of the supply.

Only one sewer has been built during the year, in Greene street, from Mercer to Wayne street.

All of the sewers built heretofore by the board are in good condition, and have required but a small amount to be expended upon them for repairs.

By an amendment to the sewerage act passed at the last session of the legislature, it is made the duty of the board of water commissioners to have the control of, and keep in repair, the sewers built by the common council.

The act provides that means for that purpose shall be provided annually, by a tax not exceeding 20 cents upon each parcel or lot of ground in the city. The amount raised by the tax will be applied by us, as far as necessary, for the purposes specified by law, viz., for cleansing and repairing the sewers and their appurtenances.

It will be necessary, at no very distant day, for the board to take measures for opening some kind of a canal along the westerly side of the city, from which to flush out and clean the main sewers.

A canal ten feet wide and four feet deep, with large tide gates at each end, would be of sufficient capacity for the purpose.

It will be advisable to secure the ground on Bergen hill for another storing reservoir, as has been recommended by the engineer of the board for the last four years. We have room for about 15 day's supply, which is not enough; and we feel it our duty at an early day to provide for at least 60 days' supply.

Feeling assured, gentlemen, that the enlargement undertaken by the board and now so nearly completed, was necessary, and that the time when it was begun was opportune, we hope before the year is passed to congratulate you that for ten years to come, at least we have an assurance that the city will be abundantly supplied with pure and wholesome water.

All of which is respectfully submitted.

D. E. Culver, *President.*
E. Pray.
Geo. McLaughlin,
N. D. Taylor,
Wm. Clarke.

Elegant and Appropriate Present.—A pleasant reunion of the many friends of Colonel A. W. Von Schmidt, the energetic and accomplished Superintendent of the Spring Valley Water Works Company, took place at the residence of the gallant Colonel, in Guy Place, the object of the meeting being the presentation of a superb table service, of solid silver plate, by the employees of the Company, as a token of personal regard. The presentation was made by Eugene Lies, Esq., (on behalf of the eighty-two regular employees, all of whom were contributors to the purchase fund,) in an eloquent and appropriate speech, and was received in an equally happy manner by the Colonel. After the presentation, the guests partook of a bountiful and choice collation, embracing all the luxuries of the season, and the company broke up at a late hour, having passed a thoroughly pleasant evening. The inscription on the elegant casket enclosing the plate, is as follows; "A. W. Von Schmidt, Chief Engineer of the Spring Valley Water Works Company, as a Testimonial of esteem from the Employees.

San Francisco, September, 1864.

Water Supply for Paris, France.—The city of Paris is just about to undertake a gigantic work, the supplying the city with pure water. To this end a reservoir capable of supplying 40,000 cubic feet of water every twenty-four hours, is now being constructed at Menilmontant at an expense of 40,000,000 francs. The water is to be brought from the Marne, and will at least be an improvement on the impure element which the *porteurs d'eau* bring every day at "ungodly" hours and exorbitant prices.

The Albany Atlas & Argus, and other papers, thus refers to their merits of Hubbel & Co's Golden Bitters.—We take pleasure in calling the attention of our readers to the Golden Bitters, prepared by Hubbel & Co., of Hudson New York. These Bitters, although only recently brought into market, have acquired a marked degree of public favor, which must soon create for them a very general demand all over the country. They are composed of gentian root, calisaya bark, sassafras, calamus, and other of the best approved vegetable remedies, preserved in Jamaica rum; and aside from their conceded excellence as a remedy for dyspepsia, heart burn and nervous debility, are unequalled as a pleasant and invigorating beverage, encouraging a healthful appetite, and imparting buoyancy to the body. We feel perfectly safe in recommending them, not only for their purity, but for their remarkable qualities.

The Magnesium Light no Novelty.—Alluding to the use of the magnesium light for photographic purposes, the "American Journal of Photography" remarks, that the metal magnesium has now been known for upwards of half a century. Its discoverer observed that it burns with a bright light, a fact which in the absence of any trial might easily have been predicted from the nature of its products of combustion. The magnesium light so much talked about is, therefore, no novelty; some one has, however, recently observed that wire is the most convenient form in which to have the metal for burning, and this clever observation has brought the light into notoriety. The burning of magnesium wire is a very pretty and instructive chemical experiment; it is very interesting to see a silver white metal ignite and burn vividly in a lamp-flame. In our opinion, magnesium has not been found to possess any other practical virtue. If magnesium were as cheap as lead, it might under some circumstances rival gas, or rock oil, as an illuminating material, and were it as cheap as silver, and could produce the brilliant magnesium light, which some enthusiastic persons have seen, it might be useful for most photographic purposes, as a rival to the lime light. But the plain fact is that the intensity and brilliancy of this light have been enormously exaggerated. The light from a magnesium wire, burnt in a spirit lamp-flame, is not greater, and perhaps not more intense, than a good coal-oil lamp will give, and it is not at all comparable with the lime light. But our enthusiastic English friends tells us that photographs have been made by it, and that it has extraordinary actinic properties. In the winter of 1840-41 a daguerreotype was made at night before a large audience, by means of the lime light, and since that time similar experiments have been, at least in America, a common lecture room illustration. We have made an ambrotype by the light of coal-oil lamps, and it is a common thing to produce transparencies by gas-light. To believe the English journals, one Moule has been for years making photographs at night with a kind of gunpowder, &c. This magnesium light is surely a case of "great cry and little wool."

A LIGHT SUPERIOR TO GAS AND CALCIUM!

French and English chemists are now interesting themselves about a new discovery which is called the "magnesium light." It is said that this light is richer in actinic power than any other artificial light known—is so rich, indeed, in chemical rays that the sun itself, when unobscured by fog or cloud, exceeds only by thirty-four times the chemical power of a magnesium flame having the same apparent diameter as that which the sun presents! The result is, that by the light produced by the combustion of magnesium-wire, such as is now being sold at only six cents a foot, we are able to obtain, in any weather, and at any hour of the day or night, much better photographs than can ever be obtained by sunlight, except on clear and sunny days. Magnesium will thus render us henceforth independent of the sun for photographic purposes, and will, moreover enable us to obtain photographic pictures of places—such as the interior of caves and mines, the passages in the interior of the Egyptian pyramids, and the like—into which sunlight never can enter. But it is not in actinic power alone that the magnesium light exceeds all other artificial lights yet produced. For purposes of artificial illumination generally it is without a rival. A very thin magnesium-wire will give off, in burning, as much light as a very powerful electric light; it is soft and diffusive, and does not in the least dazzle or pain the eyes. It is, moreover, of the purest white, so that all colors, even to the most delicate tints, are seen in it as perfectly as in sunlight. A magnesium lamp also has another advantage over both the electric lamp and the ordinary gaslight—it can be carried in the hand, from place to place, as readily as a candle.—*American Artisan.*

Rich Lead.—A quartz lead, but recently opened, near the French mill on Little Deer Creek, says the Nevada Transcript, now yields the handsome sum of $60 to the ton. Last week the "clean up" amounted $3,000. This lead was struck last March.

THE MINING & PETROLEUM STANDARD AND AMERICAN GAS-LIGHT JOURNAL, is published at No. 15 Nassau street, cor. Pine, on the 2d and 16th of every month, and is a recognized official organ of—

LIGHT, HEAT, MINING INTERESTS.

PETROLEUM, WATER-SUPPLY, AND

SCIENTIFIC SUBJECTS GENERALLY.

JAMES W. BRYANT, EDITOR AND PROPRIETOR.

W. S. SHERMAN, PUBLISHER.

PROF. C. ELTON BUCK, CONSULTING CHEMIST.

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☞ All communications to be addressed to "The Editor," No. 15 Nassau Street, New York.

AGENTS.

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The Mining and Petroleum Standard

AND

AMERICAN GAS-LIGHT JOURNAL,

PUBLISHED ON 2D AND 16TH OF EVERY MONTH.

JAMES W. BRYANT, ... EDITOR.

WEDNESDAY, NOV. 2d, 1864.

BACK NUMBERS WANTED.—We want to complete our files of the Journal, the following numbers, for which we are willing to pay full price.

Vol. II—No.'s 13, 22, 24, 25, 29 and 34.

Vol. III—No.'s 40, 42, 44, 47, 48, 52 and 56.

Vol. IV—No.'s 63, 64, 67, 68, 69, 70, 72, 74, 80, 82, 83.

Vol. V.—No.'s 91, 93, 95 and 96.

Those of our subscribers who do not bind the Journal, would do us an especial favor by forwarding to us any of the above numbers. We are being constantly called upon to furnish back issues of our paper by those who value it for future reference, and we have supplied them until all of the above numbers are exhausted.

☞ We are at present without our usual valuable scientific contributions from Prof. Henry Wurtz, in consequence of his absence in Canada, where he is occupied in some important geological and mining examinations. His attention to the New Hampshire Silver Lead Mines which have opened so favorably, has also kept him from devoting his pen to us—he will, however, soon gratify our readers with some articles.

PETROLEA.—The New York Herald always watches, through its correspondents, Argus eyed, permitting nothing to escape its notice, either interesting or valuable to the public. In several of its late issues, and especially that of the 27th ult., information respecting the wells of Petroleum, and the district in which these new mines of wealth are flowing, as also the method of obtaining the oil, is most fully and graphically rendered. It is unneccessary to call the attention of our readers to the Herald, for who does not read it?—but we would suggest that they preserve those papers which contain the correspondence we refer to for reference hereafter, as it is quite improbable that the same intelligence can be ever again seen in so succinct and complete a form.

OUR CHANGE OF TITLE.

Our readers will observe the change of title to our Journal. The reasons for it are various, and we believe our friends will all approve of it. Having determined to give attention to MINING INTERESTS and to the absorbing and truly interesting subject of PETROLEUM, it seemed proper that our title should indicate the character of the Journal more distinctly than the original name expressed. To those especially interested in gas light and its incidents we will say that we shall not neglect that department. The new field we have taken will give us a great additional circulation, and makes the Journal more valuable as an advertising medium, and far more interesting as a reading paper.

DRAKE'S GAS-LIGHT MACHINES.—The principle of generating gas from volatile oils has, for many years past, been familiar to all who have given the subject of gas-light any attention. In France as well as in our own country, many different machines have been used with more or less success, and the only objection of importance raised against their use was, that in winter when light is most wanted, the low temperature of the atmosphere condenses the vapor from the oil, thereby depriving the gas of so much carbon that but little light would be given. This apparently insuperable difficulty is now overcome by the use of a volatile oil called Gasoline, being an early distillation from Petroleum, the vapor from which does not condense at a temperature considerably below freezing point. Mr. Drake has beautiful mechanism to perform the duty of making the gas, and it is now perfected as a successful and complete thing.

Messrs. Mitchell & Vance, No. 620 Broadway, are agents for this machine, and their advertisement in our journal will give some idea of its utility, but the machine itself at their store best sets forth its value.

Messrs. Geo. H. Kitchen & Co., No. 561 Broadway, also have them for sale.

We confidently recommend these machines where gas cannot be obtained from public works.

ATLAS OF THE OIL REGIONS.—Our readers will see by refference to the advertising columns, that Messrs. F. W. Beers & Co. have nearly ready for publication a very comprehensive and complete collection of NEW MAPS of the entire Oil regions of Pennsylvania. A map to be of any real value should be correct, and the only way yet known of making a correct map is that which has been pursued by Messrs. Beers & Co., who, with a large corps of surveyors and engineers during the past summer and fall, have actually surveyed the whole field, carefully noting down everything of interest connected with the production of oil. Very few persons have any idea of the magnitude of such an undertaking; it is an easy matter from old maps, to make a map of any section of the country, as our war maps are generally made, with here and there some slight alterations thrown in at random, to represent what is supposed to be the altered state of the country—and we are informed that some of this class of maps of the oil regions have been published by parties who have not had a surveyor within hundreds of miles of the territory they profess to represent, but who wish to take advantage of the eagerness of the community to see on paper that portion of our country in which all feel so deep an interest. We would advise all who wish a really reliable map, to await the appearance of that of Messrs. Beers & Co., which we are assured will be out at the time promised.

TREATING TAR, AND OBTAINING PRODUCTS THEREFROM.—The treatment to which Mr. George Lauder, of Glasgow, proposes to subject the liquid obtained in the manufacture of naptha from coal-tar, and known as tar or dead oil, consists essentially in mixing the said oil with petroleum, naptha, turpentine, or other hydro-carbon liquid, but preferably with petroleum spirit, subjecting the mixture to the action of an acid or acids, alkali or alkalis, and distilling the mixture to obtain the following products—namely, the spirit or hydro-carbon added to the tar or dead oil, refined tar or dead oil, or a mixture of these two, according to the weight required, and a thick lubricant. Experimentally, he has taken 100 parts of tar, or dead oil, added thereto 50 parts of petroleum spirits, and then to the mixture 4 per cent of sulphuric acid. He thoroughly agitated these, and allowed such mixture to stand for (say) twelve hours; at the end of that time the sediment which had settled to the bottom of the vessel was drawn off. The mixture was then washed with water, and allowed to stand over a solution of chloride of lime for six hours, the sediment was again drawn off, and the washing with water repeated, after which the mixture was pumped or passed into the still, and distilled over by the application of heat, and collected in receivers as required. The thick lubricant was the residue left in the retort after the oil was distilled over. Mr. Lauder's improvement in the apparatus employed in obtaining these products consist in the employment of a pipe or vessel between the still and receiver or receivers. Such pipe or vessel being filled to any desired level with water, dilute sulphuric acid, or other acid or acids, or an alkali or alkalis, over the surface of which liquid the distillate has to pass. The desired liquid level is maintained through a syphon, or other bent pipe, connected at its outer end to a source of supply.

HOW PETROLEUM IS FORMED.

The Pittsburg Chronicle, speculating on the formation of petroleum, says: "We may set it down as an axiom that nature is not only capable of producing now all articles that she has never produced, but that she is and will continue to produce them until she substitutes something better. Perhaps our meaning will be better understood by applying to it a single article. Suppose, for instance, we take the one in which we have so deep an interest—petroleum. This is known to be hydro-carbon, composed of two gases. These gases are primary elements, indestructible and exhaustless in quantity. One of them—hydrogen—is a constituent of water, and of course is inexhaustible as the ocean. The other is a constituent in all vegetable forms and in many of our rocks. One hundred pounds of lime-stone, when burned, will weigh but sixty pounds. The part driven off by burning is carbonic acid. Underlying the "Oil Rock" is a stratum of lime stone, of unknown thickness, but known to be upwards of one thousand feet in depth. The water falling on the surface and percolating through the porus sandstone that overlies the oil rock, becomes charged with salt, potash, salpetre and other chemical ingredients, and finally reaches the lime-stone rock and decomposes it—the carbon uniting to form oil, while the oxygen is set free to ascend to the atmosphere or unite with minerals and form oxydes. The reverse of this process is seen in burning the oil in a lamp, the oxygen in the atmosphere uniting with the carbon in the oil forming carbonic acid, and with the hydrogen forming water—thus completeting the circle. The question is frequently asked, when will the oil become exhausted? We may answer, when the ocean is, and not before."

SOAP FROM COAL OIL.—The Oil City Register, of Pennsylvania, has seen a good article of soap manufactured from coal oil. It is claimed that soap manufactured from this oil will remove all kinds of stains and dirt, and do more work than any other and in less time.

ELECTRIC LIGHT.—At Lorient, during some experiments with the electric light, a signal was fixed at 700 yards, and at 500 yards from two ships, when the signals given by flags from the summit of the mast were rendered perfectly visible on board by means of the electric light. A third experiment caused great surprise and admiration. A diver descended 20 feet under water, and by means of the light was enabled to distinguish the decimal divisions on a scale which was sent down to him, and to give proofs of it. The experiment was deemed conclusive. It is now established that an electro-magnetic machine may be permanently fixed to light large workshops, sub-marine works, and narrow passages into harbors. It was further observed that when the light was brought to bear on the water, shoals of fish were attracted by the unusual appearance, and continued to swim round the part lighted. Eels and other fish which were at the bottom of the sea came up to the surface.

RAILWAY WORKING EXPENSES.—The total working expenses of the railways of England and Wales in 1863 amounted to £12,659,618, against £12,050,-581 in 1862; of the railways of Scotland to £1,-617,204, against £1,530,058 in 1862; and of the railways of Ireland to £750,412, against £697,772 in 1862. The aggregate for the United Kingdom was thus £15,027,234 in 1863, against £14,258,409 in 1862. The length of lines at the close of 1863 was 12,322 miles, and at close of 1862, 11,551 miles, showing an increase of 771 miles.

MINERAL TRAFFIC ON RAILWAYS.—The gross receipts of the railways of the United Kingdom from mineral traffic—that is, from the carriage of coal, coke, and minerals—amounted in 1861 to £5,194,193; in 1862, to £4,957,406; and in 1863, to £1,419,667. Of the amount earned under this head last year, £4,504,434 was yielded by England and Wales, £885,080 by Scotland, and only £30.153 by Ireland. The total quantity of coal, coke, and minerals carried last year in England and Wales amounted to 55,613,641 tuns, against 51,442,384 tuns in 1862, and 51,617,741 tuns in 1861: in Scotland, to 12,-194,972 tuns against 11,717,464 tuns in 1862, and 11,766,609 tuns in 1861; and in Ireland to 234,541 tuns, against 246,016 tuns in 1862, and 220,084 tuns in 1861.

EXPLOSION IN THE BALTIMORE CITY GAS WORKS.—A portion of the machinery of the Baltimore city gas works exploded about one week since. The building in which the explosion took place was torn to atoms—doors, windows, shutters, piles of brick, rubbish, tools, machinery, &c., being thrown and strewn in every direction. What remained of the building was almost completely destroyed by fire, caused by the burning gas. The loss is from $30,-000 to $40,000, which the company lose themselves, being their own insurers.

PEAT GREASE AS A LUBRICANT. An invention has been patented by Mr. H. Caunter, of Stornaway, in the Isle of Lewis, which relates to obtaining a lubricating matter by the combination of caustic alkali with the tar, crude oil, or grease resulting from the distillation of peat. The alkali which the patentee prefers to use is caustic soda of about 1100 specific gravity, in proportions of about 3 gallons of the alkaline solution to 1 cwt. of the product distilled from peat. He also obtains a lubricating matter, adapted to various purposes, by macerating or triturating together the tar, crude oil, or grease obtained from the distillation of peat with water, and without the admixture of alkali or alkaline solution.

The fish-oil of the Eastern fisheries, which sold for $9 a barrel a few years ago, now brings $40,

PETROLEUM REVIEW—NOVEMBER 2d, 1864.

NEW YORK, Nov. 2d, 1864.

CRUDE. The market has been firm during the past two weeks—and at the close is a little higher in consequence of the rise in gold. Sales at the close include 500 bls. 40° to 47° gravity, 46½; 450 bls. 40° to 45° gravity, at 47 cts. and 1,000 bls. b.o. all the month at 48 cts. Crude on the creek is firm, but the export demand in this market is declining.

REFINED. The market has been very steady, and the rise in gold the past few days has also affected refined. I notice sales of bonded including 1,000 bls prime light straw to white at 68 cts., 500 bls. prime white 69 cts. 1,250 bls. light straw white at 66 to 67 cts. and 250 bls. light straw at 60 cts. Free oil is in fair demand, and the stocks rather small—I notice sails of 400 bls. prime light straw white at 84—500 bls. standard white 85 cts.—1375 bls light straw white at 82 to 83 cts.—and 187 bls. straw 79 cts. Oil in cans in bond is selling at 82 to 85 cts. and free at 97 cts. to $1,00.

REMARKS. The market is unsettled—and the trade seem inclined to remain inactive until after the election—when gold and exchange rise, shippers come into the market thus making it some what active. The arrivals are for the past two-weeks 21,271 bls. export for the same time 450,260 gals—and since January 18,-598,600 galls.

B. L. HARSELL.
Commission Merchant,
132 and 134 Maiden Lane, N. Y.

NEW YORK MINING EXCHANGE.

NEW YORK, Nov. 2d 1864.

	Bid.	Asked		Bid.	Asked
Copper Stocks.			***Gold Stocks.***		
Aztec	7⅜	9	Benton	1	1¼
Bedford	1	1⅛	Consol'd Gregory	25	28⅞
Boston	4⅛	5¾	Corydon	—	3
Caledonia, A. P.	10	12	Gunnel	3¾	4⅛
Canada	3¾	4	Great Western	—	8
Carp Lake	8	5	Hope	—	9
Central	65	70	Isaac's Harbor	⅝	⅞
Columbian	—	24	Manhattan	—	9
Copper Falls	34⅛	38	Mariposa	44	44¾
Clifton	—	$1	Montana	⅛	1
Dacotah	—	5½	New York	2⅛	3
Derby	⅞	1⅛	N. Y. & Nova Scotia	⅜	1¼
Douglass	—	—	Quartz Hill	9¾	10
Evergreen	18¾	20	Quicksilver M'g Co	81	82
Flint Steel River	12	13⅛	Rocky Mountain	—	10⅛
Frue	2¾	5	Smith & Parmelee	7	12
Grand Portage	—	—	***Coal Stocks.***		
Hancock	12⅜	14	American	98	100
Hamilton	—	6	Ashburton	—	25
Hilton	5	6	Central	62	65
Hudson	1	2	Cumberland	61	62
Huron	32	33	Del. & Hud. Canal	206	208
Indiana	8¾	9¾	*Hampshire & Balt.	104	110
Isle Royale	20	20⅜	Pennsylvania	213	215
Keweenaw	—	6	***Lead Stocks.***		
Knowlton	7	10	Bucks County	⅝	⅞
Lafayette	1	2	Clute	1⅜	1⅞
Manhattan	—	—	Erie	—	20
Mendota	—	—	Macomb	3¾	5
Merrimac	4¾	5½	Plancentia Bay	1¾	1⅞
Minnesota	33	37	Sussex	¾	⅞
New York, A. P.	2	3⅛	Wallkill	3⅛	6
N. J. Consolidated	4	4¾	***Iron Stocks.***		
Norwich	—	6	Copake	8	10
Ogima	5	6¾	French Creek	⅜	1
Ontonagon	3	4⅛	Teal Lake	4⅜	6
Penn	—	11⅜	***Miscellaneous.***		
Providence	1⅜	2	Rutland Marble	17	20
Quincy	96⅜	98			
Reliance	1⅜	2¼			
Rockland	12⅜	14			
Superior	8⅜	9			
Sharon Consolidated	—	3			

* *Ex. div.*

MINING IN SPAIN.

The Palentina Leonesa Company have decided upon selling the whole of the mines and works by public tender. The properties extend over considerably more than 2000 acres, and are situated in the valleys of Sabero, Colle, and Veneros, in the province of Leon.—They comprise large mines of coal, iron, and kaolin, in connection with which is an extensive ironworks established on the English system, the mines, works, plant, and stock in trade being of the estimated value of 10,500,000 reales (£110,526 5s.) The sale will take place at Madrid on Oct. 31st, on which day the sealed tenders will be opened. Each tender must be accompanied with a certificate that 300,000 reales (£3157 18s.) has been deposited at the Caisse des Depots et Consignations as a guarantee for the due execution of the deed of purchase.

OIL WELL DISCOVERED IN NEVADA TERRITORY.—F. A. Miller and others, of Austin, Reese river, have recently discovered a petroleum spring, about seventeen miles from that city. The oil runs constantly, and there is every evidence that extensive coal beds are underneath the spring.—*San Francisco Morning Call.*

STEAM ENGINES IN PRUSSIA.—From an official return recently issued it appears that the total number of steam engines at the end of 1862 was 8,653, with 365,-707 horse-power, showing an increase of 5,821 engines and 273,243 horse power, as compared to 1852, when there were only 2,832 engines, with a total of 92,463 horse power.

REPORTED DISCOVERY OF PETROLEUM.—The Oregonian of 5th September is informed by an officer of the steamer John H. Couch that a rumor was in circulation, on the 2d, at Astoria, that a rich vein of petroloum had been struck in that vicinity.

France works 400 coal mines, 202 iron mines, and mines of other substances 207.

ATLAS
OF THE
OIL REGIONS.

The extraordinary developments of the last few years have rendered indispensable to the community, A NEW and RELIABLE map of that portion of Pennsylvania, known as the OIL REGIONS. And such a Map, in the form of an Atlas, made from actual surveys of the whole territory (and the only surveys that have been made in the territory,) is now being prepared for publication by the undersigned, to which your special attention is invited. In will embrace the whole of VENANGO and portions of CRAWFORD and WARREN Counties, and is designed to be the most complete and perfect work of the kind ever published, showing distinctly—

1 A general map of Venango and parts of Warren and Crawford counties, Penn., and enlarged plans of each township.

2 All the original lot lines.

3 All subsequent subdivisions of lots in the oil districts, with the names of present owners or lessees.

4 All the Roads, Rivers and Creeks accurately delineated.

5 All Dwellings, Factories, Mills, Refineries, and Shops of every description.

6 Enlarged plans of all important Towns and Villages.

7 Enlarged plans of all the oil lands on Aleghany River, Oil Creek, French, Pithole, Tionesta, Hemlock and Tidelute Creeks, Cherry and Cherry Tree Runs, and all other Creeks and Runs on which discoveries of oil have been made.

8 Location and brief description of the property of all the principal Oil Companies.

9 Location and names of all the Oil Wells in the Territory.

10 A brief history of the Oil Business, from its first discovery to the present time, with valuable statistical information, making a volume of some fifty pages, about 15x18 inches, substantially bound.

A limited number of business cards pertaining to the production or sale of oil, or oil territory, will be received, and if early application be made, parties may have views of their establishments, or wells, with brief notices of the same, inserted.

The surveys for the Atlas are completed, and the proprietors intend to have it ready for delivery to subscribers (only) by about the 1st of January next.

All persons or firms desiring the work are requested to send their names as subscribers to the undersigned before the 1st of December, and designate the number of copies wanted, and the place where they wish them delivered.

F. W. BEERS & CO.,
43 John St., New York,
or Franklin, Penn.

Franklin, Penn, Oct. 20, 1864.

U S. MAIL LINE FOR CALIFORNIA,
via Panama, under convoy of a United States war steamer throughout the Atlantic voyage.

The following first class side wheel steamers will be despatched at noon precisely, from pier No 3 North river.—

Nov. 3—NORTH STAR, Jones.
Nov. 14—COSTA RICA, Tinklepaugh.
Nov. 23—OCEAN QUEEN, Seabury.

For freight or passage apply to

D. B. ALLEN, No. 5 Bowling Green.

ROBBINS' PATENT
GAS AND WATER JOINT.

THE PROPRIETORS of this unrivalled joint are now prepared to introduce it to general use, and to guarantee that, in all respects, it will fulfil perfectly all the requirements of either water, gas, or steam. It is a joint which remains in all situations absolutely tight.

The following illustrations, with the appended explanations, will give a good idea of the improvement:

Fig. 3.

Fig. 1.

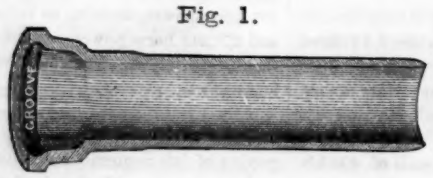


Fig. 2.

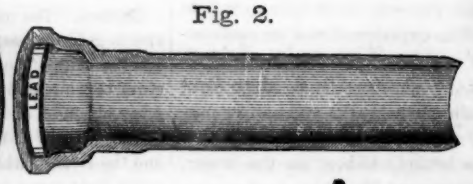


Fig. 4.

FIG. 1. Is a sectional view of a pipe showing a groove to receive a lead ring.

FIG. 2. Is a sectional view of a pipe showing a lead ring in the groove.

FIG. 3. Represents a former, which is used in the bell end of the pipe while casting the lead ring. Before using the former, however, a strip or belt of India rubber is first inserted in the socket, against which the former rests to prevent the lead escaping from the groove while being cast. Upon the cooling of the lead, the former and rubber ring are withdrawn from the socket, and the lead ring is left projecting inwards from the groove all around, forming an indestructible packing to receive the spigot-end of the pipe.

FIG. 4. Shows two pieces of pipe in connection with an hydraulic jack, by which the spigot-end of the pipe (which is cast tapering and may be cast in a chill), is forced into the lead ring in the groove which perfects the joint. A, represents the jack; B, B, the chains by which the pipes are drawn together; and C, C, pieces of pipe.

This ring joint packing may be cast at the foundry or any convenient place, and when delivered at the ditch, may be laid, and perfect joints formed, by any laborer, above or below the surface, or in ditches filled with water, there being *no joint ditching required*, and it can be laid with very great rapidity.

Among the economies realized by this joint may be enumerated, the saving in the weight of the pipe, in the amount of lead required to be used in forming the packing, in the labor of ditching, and in laying the pipe.

The bell or socket may be cast one-half the usual length, as the width of the groove requires, but from a half to one and a half inches, according to the size of the pipe, thus saving in the total weight about two hundred pounds per ton.

The weight of lead required to form this joint, as compared with the amount of lead used in forming a joint according to the old method, is fully seventy-five per cent. less, only so much being required as to maintain the compensating principle, or enough to allow (upon the raising or depressing of the line of pipe out of a direct line) what is lost upon one side of the ring packing, to take its place upon the other; thus securing flexibility of the joint without affecting its reliability. The use of yarn or hemp packing is dispensed with, the cost of which is an entire saving as compared with the old method of making joints.

The saving of labor in ditching is the total amount usually expended in digging joint-holes, there being *no joints to be caulked.*

The saving in labor in laying pipe furnished with this joint is a sum equal to the whole cost of carrying lead, fuel, ladles to the ditches, casting the lead, bailing out water, and the entire labor of caulking, less only the sum charged for casting the lead ring packing at the foundry, which is comparatively trifling. This last-mentioned economy has been estimated by the best engineers at seventy-five per cent., or the same as the saving in the quantity of lead used.

The cost of pipe cast from our patterns is the same per ton as pipe cast for the old form of joint. The principal iron-founders propose to charge the same price.

We have submitted these joints in water-pipes to a pressure of two hundred and fifty pounds to the square inch, and they have remained perfectly tight. It has also been submitted for months in gas-pipes to the ordinary pressure of our city gas-mains, without any leakage whatever. We are aware that these statements may be deemed by many extravagant, but the merits of the improvement warrant them all, and the most skeptical may be fully convinced by an investigation of its value, and by witnessing the tests to which we submit it, or by its use under any conceivable circumstances.

TESTIMONIALS.

OFFICE OF THE WATER COMMISSIONERS,
CITY HALL, JERSEY CITY, October 14th, 1863.

Dear Sir,—On the 26th of May last, about two hundred and sixty feet of cast-iron water-pipes, six inches in diameter, with joints constructed according to your invention, were laid for the Jersey City Water-Works, in Prospect street.

The operation of uniting the joints of the pipes, was performed with remarkable facility, and with an important saving in time, materials, and labor. The joints proved perfectly water-tight, after turning the full head of water on the pipes.

In my opinion, your invention has proved entirely successful, and will be found highly beneficial to water companies.

Yours, respectfully,
ROBT. C. BACOT,
Superintendent and Engineer, Jersey City Water-Works.

MR. R. C. ROBBINS.

ENGINEER'S OFFICE, CROTON AQUEDUCT DEPARTMENT.

Dear Sir,—I have examined your plan for making joints in cast-iron water pipes, and have a report from one of my assistants, of certain experiments made by you, to prove the certainty and economy with which the joints can be made, and their stability when finished.

I think the experiments showed that the joints could be made quite as rapidly, if not more rapidly, than those made in the ordinary method now in use; the quantity of lead used was less than that required in the common joint, and no yarn packing was required. In these respects, your joint seems superior.

After the joints were made, a pressure of three hundred pounds to the square inch, was put upon the pipe in such a manner as to test the efficiency of the joint to prevent both leakage of water, and separation of the pipes from each other longitudinally. This pressure failed to produce either leakage at the joint, or separation, so long as the pipes lay in a direct line; but on deflecting them six and a half inches, in a length of twelve feet, the joint commenced leaking. It is fair to add, that this is a greater deflection than would often be found necessary in laying pipe.

I think the efficiency of the joint in both the points tested in this last experiment, might be increased by increasing the quantity of lead, both in thickness and width.

Altogether, the result of the experiments was such that I have determined to make a more thorough test of your invention by putting down about one thousand feet of pipe, when we commence our operations for the coming season.

The diameter of the pipe subjected to experiment, was six inches, and is the same size that I propose to put down next year.

I am, very respectfully, your obedient servant,
A. W. CRAVEN, Chief Engineer, &c.

To R. C. ROBBINS, Esq., Jersey City.

METROPOLITAN GAS-WORKS,
ENGINEER'S OFFICE, NEW YORK, October 9th, 1863.

Dear Sir,—The undersigned had the pleasure of being present at an experimental test of your patent joint for gas and water pipe, made at the yard of the Croton Aqueduct Department, and cheerfully testify to the results obtained, namely:

First experiment was made with two lengths of eight-inch pipe, jointed together, when a pressure of three hundred pounds to the square inch was applied. This pressure did not force the pipe apart, nor start the joints, but they remained, during this experiment, perfectly tight.

Second experiment was made by deflecting the pipe five inches, which is about equal to eighteen inches in one hundred feet, and the same pressure applied, which caused a small leak at the joints.

Third experiment was made by taking the pipes apar and rejointing them, when the same pressure was applied when lying straight and when deflected; at this experiment there was no leakage.

From these severe tests it is my impression that the superiority of your patent joint has been made manifest, and that it must eventually supersede the old way of jointing pipes together, saving both time and material.

Wishing you success in your enterprise,
I am, very respectfully, yours, &c.,
AMBROSE J. WHITE, Engineer.

To R. C. ROBBINS, Esq.

OFFICE OF THE METROPOLITAN GAS-LIGHT COMPANY,
NEW YORK, October 9th, 1863.

Dear Sir,—Having been present at the testing of your patent joint for gas and water pipe, at the yard of the Croton Aqueduct Department, I can testify to the results as stated by Col. A. J. White and fully concur with him in the opinion expressed in his letter to you of this date.

Very respectfully, yours,
W. TITUS, Secretary.

R. C. ROBBINS, Esq.

NEW YORK, October 23d, 1863.

Gentlemen,—I am pleased to be able to inform you, that we are fully satisfied that we have done well in adopting your "Improved Joint," in the construction of an aqueduct which we are now building on Oil Creek, Northwestern Pennsylvania.

We have ten miles of three and four inch pipe to lay this season, and, in our estimation, the perfection of the joint, economy in lead, and rapidity with which the pipe can be laid, render it entirely preferable to any other method of laying pipe.

Our Mr. Hutchings advises us that he is putting down the three and four inch pipe at the rate of twenty-five to thirty lengths per hour, with two men in the trench. We are much pleased with this result.

Respectfully yours,
HUTCHINGS & FOSTER.

Messrs. R. C. ROBBINS & Co.

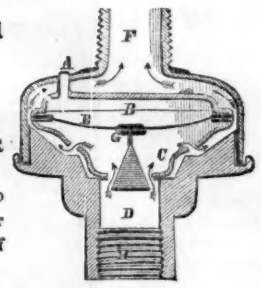
For further information, or for prices and terms, which will be very reasonable, apply to

R. C. ROBBINS & CO.,
No. 218 FULTON STREET NEW YORK

NOTICE TO GAS COMPANIES AND GAS CONSUMERS.

THOMPSON'S PATENT GAS CONTROLLER,

The only Self-Acting Gas Controller, Regulator, and Burner Combined which has ever been invented, or known to sci nce.



THE PRINCIPLE UPON WHICH THE THOMPSON'S AUTOMATIC GAS CONTROLLER works is one well known to mechanics, and is simple in its operation.

Within the circumference of a small cylinder below the burner is placed a conical valve attached to a movable diaphragm. The diaphragm rises or falls as the pressure of gas from the pipe is lesser or greater, and the valve acts upon the valve-seat with such regularity of movement that in a difference of from five-tenths of an inch pressure to five inches the variation in flame is hardly perceptible.

The simplicity of its machinery and the nature of the material used in its construction insure its regular action and durability.

In consequence of the uniform quantity of gas which passes the Controller to the burner, there is no waste, and a steady, soft flame is produced, which is important to all who read, write, or work by gas-light. The unsteady flickering blaze which invariably exists when the pressure of gas is beyond the requisition for consumption, has injured the sight of thousands who have been subjected to it.

For street lamps these Controllers are especially valuable, because the pressure varies materially during the night, and in consequence there is a waste of gas, and the light variable.

Improvements have lately been made in the mechanism of the Controller which makes them almost a perfect meter to each burner, and they are now offered to the public with more confidence than ever before.

Reference is permitted to the following named gentlemen—

Col. CHAS. ROOME, President Manhattan Gas Company, N. Y.
C. H. SANDS, Esq., President Metropolitan Gas Company, "
J. H. ADAM, Esq., President New York Gas Company, "
PETER COOPER, Esq., Cooper Institute, "
JOHN A. DUFF, Esq., Olympic Theatre, "
GEO. H. KITCHEN, Inspector of Gas Meters, N. Y.
A. L. BOGART, Esq., Gas Engineer.
Col. J. A. SABATTON, Engineer Manhattan Gas Company.
Col. A. J. WHITE, Engineer Metropolitan Gas Company.
J. K. SIMPSON, Esq., Engineer Cooper Institute.

Persons interested are invited to call at the manufactory, 52 Greene street, where they can see the operation by pressure guage and test meters.

M. L. CALLENDAR, Agent,
Office, 52 GREENE STREET.

THE AMERICAN METRE CO.,

Organized under the General Manufacturing Laws of the State of New York.

SAMUEL DOWN, PRESIDENT. HENRY CARTWRIGHT, VICE PRESIDENT. RICHARD MERRIFIELD, SECRETARY AND TREASURER.

TRUSTEES.

SAMUEL DOWN, WILLIAM HOPPER, R. H. GRATZ, HENRY CARTWRIGHT, RICHARD MERRIFIELD.
THOMAS C. HOPPER, *Superintendent at Philadelphia.*

This Company is now prepared to furnish WET AND DRY GAS METERS, STATION METERS, GOVERNORS, PRESSURE INDICATORS & REGISTERS, SERVICE and METER COCKS, and all other articles in their line appertaining to the use of Gas-Works.

The combination of Mechanical and Scientific Skill, and the long experience of the several members of the Company, is a sure guarantee of durability, accuracy and excellence of workmanship. Orders addressed

AMERICAN METER COMPANY,

512 WEST TWENTY-SECOND STREET, NEW YORK,
ARCH AND TWENTY-SECOND STREETS, PHILADELPHIA,
1 BARRETT STREET, BOSTON, will meet with prompt attention.

STEAM-PUMPS.

WORTHINGTON'S STEAM PUMPS, extensively used by Gas-Light Companies. For Sale at greatly Reduced Prices.

Also, a new and highly successful Pump, driven by water pressure, requiring no attention or repairs, and the most economical water motor yet constructed.

Patent GATES, for Water and Steam-stops.

HENRY R. WORTHINGTON,
61 Beekman street, N. Y.

WEST'S IMPROVED PUMPS, the most Simple, Durable, and Powerful, and the Cheapest in use.

J. D. WEST & CO.,
179 BROADWAY, N. Y.

GEO. H. KITCHEN & CO.,
NEW PATENT
GAS APPARATUS
For Country Residences, Public Buildings, &c.,
FROM $300 UPWARDS.
EVERY DESCRIPTION OF GAS FIXTURES.
Gas Fitting in all its branches.
561 Broadway,
NEW YORK.

NEW YORK FIRE-BRICK and Clay Retort Works. (Branch Works at Kreischerville, Staten Island.)

B. KREISCHER, office 56 Goerck street, corner Delancy street, New York.

GAS RETORTS, TILES and FIRE-BRICK of all shapes and sizes. FIRE MORTAR, CLAY, and SAND. Articles of every description made to order at the shortest notice. B. KREISCHER.

PHILADELPHIA FIRE-BRICK Works, corner of Vine and Twenty third streets, Philadelphia.

JOHN NEWKUMET,

Manufacturer of all kinds of FIRE-BRICK, GAS-HOUSE TILES, to suit all the different plans in use. Clay Retorts and Dentists' Muffles. Orders filled at short notice

GLYCERIN
FOR
Filling Wet Gas-Meters,
Cheaper than Whisky or any other substance.

We have furnished the Cincinnati Gas and Coke Company 800 barrels Glycerin, for filling their wet meters, and are now ready to supply other Gas Companies at the lowest cash prices.

We warrant our Glycerin not to corrode the meter metal, nor to freeze at the lowest ordinary temperature, nor to evaporate.

HARTMAN & LAIST,
Manufacturing Chemists,
Cincinnati, O.
Office 64 Sycamore.

Agent in New York, Paul Balluff, 95 Maiden Lane

WOODEN PURIFYING TRAYS.

PATENT
Conically Slotted Solid Wood Sieves
FOR GAS PURIFIERS.

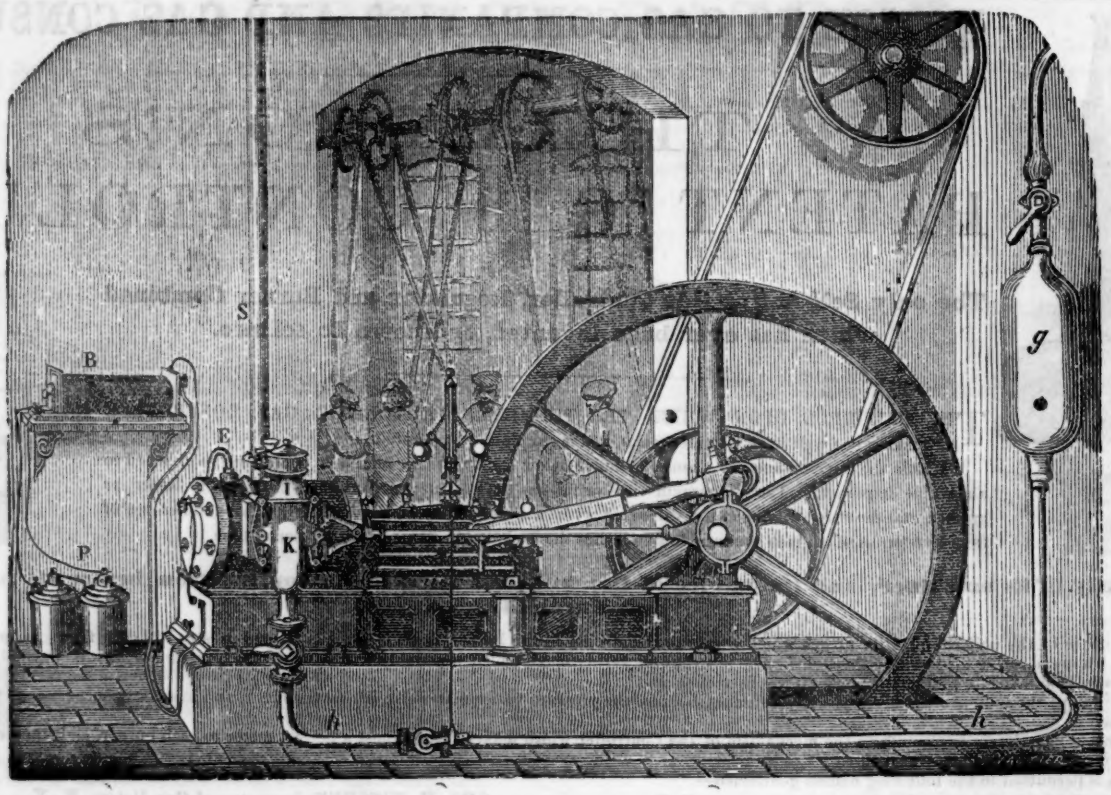
CAUTION
TO
GAS MANUFACTURERS.

The Conically Slotted Solid Wood Tray was patented 21st October, 1862, by N. O. Hawxhurst, assignee of Wm. Combe, and all persons are cautioned against purchasing such trays of R. G. Hunt, or any other person except the subscriber, as it is a direct infringment of said patent. The following companies are now using these trays.

Manhattan, New York,
Williamsburgh,
Brooklyn,
Albany,
Baltimore,
Philadelphia,
Chicago,
Louisville,
And numerous others.

Orders received by mail or [illegible]

JOHN L. CHEESMAN,
147 Ave. C, New York City.



MOTEUR—LENOIR.

LENOIR GAS ENGINE.

This is a horizontal engine, in which a piston, by a connecting rod drives a horizontal shaft.

The gas enters by the pipe "h" from the regulating reservoir "g," (made of vulcanized india rubber,) which regulates the feeding and the branches connected with the gas-pipe.

The tube, K, receives the gas conveyed by the pipe "h," and conducts it to the valve, which opens and closes alternately, by means of a rod moved by an eccentric wheel fastened to the end ot the shaft.

Two of Bunsen's piles, P, sufficient to produce the electricity are placed at a little distance from, and in communication with a Ruhmkorff electric apparatus, B. The electric current of this apparatus is conducted by means of insulated wires to the electricity distributor "m," placed on the front of the frame, while the current of electricity and its arrival at the inflammator, inserted at each end of the cylinder, is directed by the movement of the piston-rod, which, by an ingenious combination, impels a small movable slide before the distributor.

The burnt gas, after having performed its functions in the machine, escapes, by means of a valve, through a pipe, S, and the water designed to cool the interior of the cylinder enters through a double passage, by means of a pipe situated near the escape-valve, and goes out by the pipe, E.

A two horse and a half horse Engine are now in practical operation at the brass cock manufactory of Mr. A. Carr, *No.* 135 *Mercer St, between Prince and Houston Streets,* New York where those interested are invited to call and examine them.

THE LENOIR GAS ENGINE

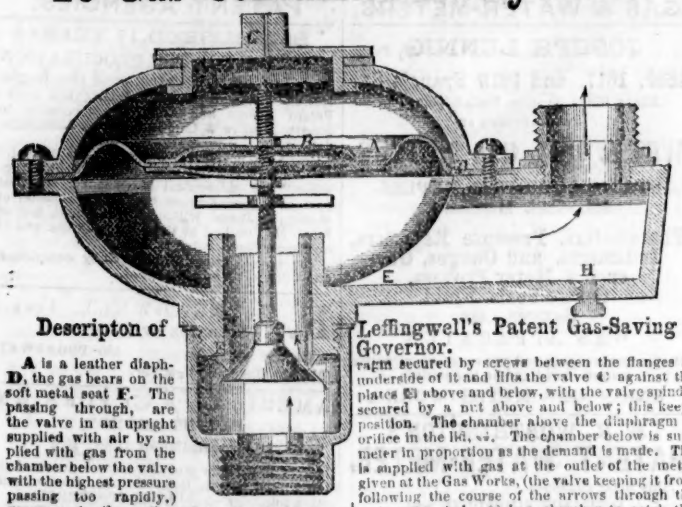
Requires no Fire and makes no Smoke,

No Noise, no Dirt, and is thoroughly safe.

It is propelled by the expansion of Air, dilated by the combustion of Gas within the cylinder, ignited by the

ELECTRIC SPARK.

To Gas Consumers Everywhere.



Descripton of Leffingwell's Patent Gas-Saving Governor.

A is a leather diaphragm secured by screws between the flanges at **D**, the gas bears on the underside of it and lifts the valve **C** against the soft metal seat **F**. The plates **G** above and below, with the valve spindle passing through, are secured by a nut above and below; this keeps the valve in an upright position. The chamber above the diaphragm is supplied with air by an orifice in the lid, **c**. The chamber below is supplied with gas from the meter in proportion as the demand is made. The chamber below the valve is supplied with gas at the outlet of the meter with the highest pressure given at the Gas Works, (the valve keeping it from passing too rapidly,) following the course of the arrows through the governor to the outlet where the distribution pipe is connected. **K** is a chamber to catch the drip, **H** is the outlet of said chamber, at which point, if the drip troubles its action, a syphon is attached which carries it off.

STURGES & FROST, (MANUFACTURERS AND PROPRIETORS FOR THE UNITED STATES OF LEFFINGWELL'S PATENT GAS-SAVING GOVERNOR,) solicit attention to the above instrument which the cut represents. It will positively lessen your gas consumption **15 to 40 per cent.** without diminishing, but greatly improving, the light, which is done entirely on scientific principles easily comprehended.

The above facts are demonstrated by thousands of consumers who have them in practical operation in different parts of the Union. By sending two three cent postage stamps to the proprietors, No. 9 Mechanic Street, Newark, N. J., the GAS CONSUMERS MANUAL will be sent, containing price of the above Governor, full information with regard to the waste of gas, its causes and how remedied, an almanac for the years of 1864-5-6 and 7; also, a diary suitable for any year, together with certificates and references of many who have the Governors in use.

Try it by all means, it will not fail you.

Each Governor is Warranted Perfect.

STURGES & FROST.

☞ As no QUICKSILVER is used, Gas Companies will find it to their interest to favor its adoption among their consumers.

PRINCE'S METALLIC PAINT,

AN INDESTRUCTIBLE COATING FOR

IRON, TIN, and WOOD.

It consists of seventy-two parts Oxide of Iron, and twenty-eight parts Cement Lime Stone in the one hundred pounds.

It has much more body than red or white lead. It is warranted perfectly water and fire-proof and to withstand a greater heat on metals, without scaling, than any other paint in use.

It is a perfect cover for all kinds of iron, tin, or wood-work, out-houses, and canvas coverings. prevents and arrests the corrosion of metals, and is not affected by the action of salt, gases, acids or ammonia.

It hardens under water, as has been fully demonstrated by its application to gas-holders, by many of the largest gas companies in the United States; which companies having thoroughly tested its properties as herein claimed, pronounce in its favor over any other paints in the market, even though sold at double its price.

As a coating for patterns of iron or wood, when mixed with shellac, it is much superior to beeswax, oil, or shellac alone, as has been proven at the large founderies in the country.

For patching boilers and making joints, it is considered superior to red lead, or any other preparation.

For cleaning metals it takes the place of crocus, rouge, and emery, being better and cheaper.

This Paint requires no more oil than dry lead or zinc, and much less than the ordinary mineral paints. It is free from any waste, and possesses a spreading and covering power unequaled.

Terms, by the Barrel or Half Barrel, Four Cents per Pound.

A liberal discount made to parties purchasing by the ton.

A Barrel or Ton will be forwarded to any gas companies desirous of testing its qualities, for which there will be no charge if it does not give entire satisfaction as being the cheapest and most durable of all other Paints in the market.

Also, Prince's Imperial Black Paint, and Prince's Protoxide of Iron.

DANIEL SLOAN, General Agent,
115 LIBERTY STREET, NEW YORK.

Local Agents—S. R. WILLIAMS, 204 South Front st., Philadelphia.
CALVIN GAY, 29 Doane st., Boston.

THE
STANDARD
Gold Company
OF COLORADO.

DIRECTORS,
ROBERT BOWNE,
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President, ROBERT BOWNE.
Secretary, F. A. MITCHEL.

MINES on FISK LODE,
BOBTAIL LODE,
GROUND HOG LODE,
ENTERPRISE LODE,
and others,

In all, 8,625 feet (linear), and large water powers and mill sites.

Capital issued, 40,000 shares, at $10 per share.

A limited number of shares are offered at the low SUBSCRIPTION PRICE (having been reserved for their customers), by

WILLIAMS & MITCHEL, 12 Wall Street.

SAFEST AND CHEAPEST SYSTEM OF INSURANCE.

WASHINGTON
INSURANCE COMPANY,
172 BROADWAY,

Cor. Maiden Lane, NEW YORK.

CASH CAPITAL, - - - $400,000.
Assets, June 1, 1864, - - - 600,000.

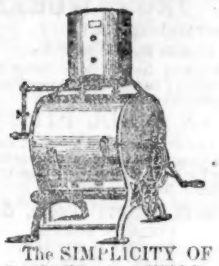
Scrip Dividend, 1863, - - 60 per Cent.
Scrip Dividend, 1862, - - 60 per Cent.
Scrip Dividend, 1861, - - 60 per Cent.

The Policies entitled to participate receive 75 per cent. of net Profits.

Insures Buildings, Merchandise, Furniture, Rents, Leases, against loss or damage by FIRE, and MARINE RISKS on LAKES, RIVERS and CANALS.

GEO. C. SATTERLEE, President.
HENRY WESTON, Vice Prest.
WM. K. LOTHROP, Secretary.
WM. A. SCOTT, Ass't Secretary.

DRAKE'S
PATENT
AUTOMATIC GAS MACHINE.



THIS MACHINE, which has been in constant use for more than two years, is now acknowledged to be the

Most Convenient,
Simple, and
Efficient Method

OF LIGHTING BUILDINGS OF ALL KINDS, out of the reach of regular gas-works, ever brought to public notice.

The SIMPLICITY OF THE APPARATUS, its ENTIRE FREEDOM FROM DANGER, the LITTLE ATTENTION REQUIRED, the EASE WITH WHICH IT IS MANAGED, and THE CHEAPNESS and SUPERIORITY OF THE LIGHT, has gained for it the favorable opinion of those acquainted with its merits.

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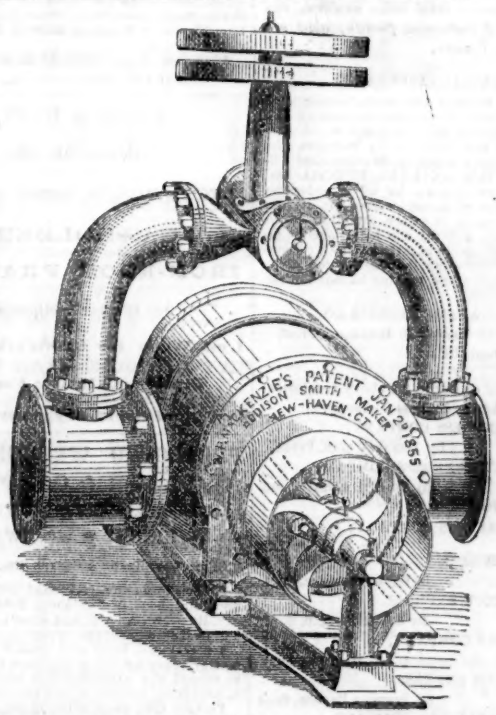

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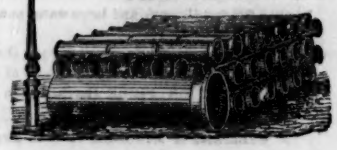

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because of its great Tonic and Diuretic qualities.

The simple fact that the preparation is from Baron Leibig, will commend it to the attention of the scientific in all parts of the country, while the use of it will at once and permanently prove to the masses everywhere that it is the long-needed desideratum—in its way.

The immense popularity of this Coffee in the Old World is an earnest that its use and popularity in America is bound to become continent wide.

Another consideration not to be overlooked in regard to the matter, is that

It Costs Less than Ordinary Green Coffee.

And requires less than half the quantity to give the same degree of strength, and its use proves it at 30 cents a pound to be cheaper than Maricaibo coffee at 15 cents a pound.

Neatly packed in pound papers, with full instructions for use on each label—in SIXTY POUND BOXES. Price, 30 cents per pound. A liberal discount to the trade.

Manufactured by the PEOPLE'S PROVISION CO., 268 Greenwich street, N. Y., to whom all orders may be addressed.

Sold by wholesale Grocers and Druggists.

Glycerin for Gas Meters.

This article is superior to any fluid ever before used for Wet Meters, and we cannot better set forth its advantages than by giving the following letter from the Superintendent of the Covington Gas Co. The superiority of our Glycerin over all others in the market, for this purpose, is admitted by every Company that has used it. We have sold, the past winter, to the Cincinnati Gas-Light and Coke Co.; to the Gas Companies of Covington, Ky.; Dayton, Springfield, Portsmouth, Urbana, and Piqua, Ohio Richmond, Ind., and Buffalo, N. Y, to whom we refer.

Glycerin is much cheaper than Whisky is now, or likely to be hereafter, and not evaporating, greatly increases the economy of its use.

OFFICE OF THE COVINGTON GAS-LIGHT CO.
COVINGTON, KY., Feb. 18, 1864.

MESSRS. W. J. M. GORDON & Co.:

Dear Sirs,—It affords us great pleasure in testifying to the superiority of the Glycerin Fluid purchased from you for filling the Wet Meters now in use by the Covington Gas-Light Company.

The difficulty of finding a non-evaporating and anti-freezing mixture for Wet Meters, has, in my opinion, been overcome by the use of your Glycerin Fluid.

I have had it in constant use for the past four months, and during that period the thermometer has ranged as low as 14° below zero, and after careful examination, I have found the fluid in the same condition as when first put in the Meters, and without the slightest discoloration.

Its non-evaporating quality does away with the hitherto unavoidable expense of filling the Meters monthly, and renders Wet Meters no longer objectionable.

In fact, I can cheerfully recommend it as being cheaper and better than any other Fluid or Mixture now in use.

Very respectfully,
S. S. STRATTON, *Sup't Cov. Gas Co.*

We have been engaged in Manufacturing Glycerin the past six years, and from our advantage in material and the large amount we make, are enabled to offer it lower than any manufacturer in this country. We will be pleased to quote prices or to give further information.

W. J. M. GORDON & BRO.,
MANUFACTURING
CHEMISTS & DRUGGISTS,
N. E. Cor. Central Avenue & Eighth St.,
Laboratory, Miami Canal, bet. Third & Fifth Sts.,
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It brings out the grain of the wood in all its original beauty, and immediately after being applied, the article polished is perfectly dry, thus possessing a very great advantage over varnish or any kind of liquid polish.

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H. B. HERTS BROS.,
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BY ROYAL LETTERS PATENT.

HERT'S & CO'S
AMALGAMATED
ALUMINUM, ZINC AND PLATINA
PENS.
WARRANTED ANTI-CORROSIVE.

In introducing this invention, Messrs. HERTS & Co. beg to call attention to the following advantages combined in these Pens:

They possess the Anti-corrosive properties of the Gold Pen.

The Freedom of the Quill, and

The Flexibility of the Steel Pen.

Thus *combining* in *themselves* every advantage found in other pens; and by their anti-corrosive properties entirely obviating all the objections hitherto existing against the use of Metallic Pens.

Another advantage peculiar to these Pens, is that they *improve* after being a *short time in use*, and may be left in the ink without fear of injury, as they *never need wiping*.

THE No. 808 "medium points," are adapted for *office use* and *general business purposes*.

THE No. 909 "extra fine points," are adapted for *Ledger, Heading, Posting, Engrossing, Ladies and School use*.

The undersigned have given HERTS & Co's Pens a trial, and are satisfied to recommend them to the general public.

FOWLER & WELLS.

Manufactory, Bradford Works, Birmingham,
ENGLAND.

Orders for the United States, Canada, South America, and the West Indies, must be addressed to

H. B. HERTS, 52 John St., New York,
SOLE CONSIGNEE.

from whom samples may be obtained *gratis*, on application by mail or personally.

The Am. Advg. Agency, 389 Broadway, N. Y., will receive orders for the above-named Pens.

New York, April 18th, 1864.

* * * * * *

We respectfully invite your attention to and consideration of the justly celebrated and reliable remedy for DYSPEPSIA, HEARTBURN, DEBILITY and PROSTRATION. The Proprietors are proud to acknowledge the unparalleled success which has attended the sale of their valuable preparation, known in nearly every portion of the civilized world as the

"GOLDEN BITTERS."

We risk nothing when we term them a *valuable preparation*, for they are one of the few articles of the present day which are not a humbug; and we are willing and able to satisfy any person or persons who will call upon us, that the celebrated "GOLDEN BITTERS" are a genuine *bona-fide hygienic* article. It is the wish of the proprietors that the virtue of the article be tested before condemning. A decision of their merits by any one who has tried them, is worth a million of purchased bogus testimonials.

For Creating a Healthy Appetite

they are invaluable, and are unequalled as a TONIC. They are mild in their action, and operate by giving *vigor* and *strength* to the system,—not by any change they produce in the solids, but through the medium of the living principle.

They are Purely Vegetable,

being composed of Gentian Root, Calamus, Sassafras, and many other remedial agents of the Vegetable world, all preserved in Jamaica Rum and Sherry Wine.

As a Beverage

They are the most *wholesome, invigorating* and *palatable* stimulant ever offered to the public. And the fact of their being prepared chemically and scientifically, precludes the possibility of a bitter, unpleasant taste, common to Bitters generally offered for sale. We especially recommend them to LADIES, and particularly to those suffering from

DEBILITY, WEAKNESS, AND PROSTRATION.

Half a wine glass of these "Bitters" three or four times a day, will produce a remarkable healthy change in persons greatly debilitated.

The "Golden Bitters" have been tried and not found wanting. They are put up in our own *Patent* quart bottles, and for sale by Druggists, Grocers, &c., throughout the world. Each bottle bears a fac-simile of the signature of Hubbel & Co.

GEO. C. HUBBEL & Co, Sole Proprietors.
CENTRAL DEPOT, American Exp. Building, New York.

THE GOLDEN BITTERS.—We are not an advocate of stimulants of an alcoholic character; indeed we deprecate this "daily tonic" idea—this "morning toddy" which we see offered in all sorts of shapes as a recuperator, invigorator, revitalizer, &c. As a rule all artificial stimulants are dangerous remedies, and must be taken into the system as you would mercury or arsenic, in very small doses. But we have had an opportunity to try the now well-advertised article known as Hubbel's Golden Bitters, and are frank to say that where the system needs building up, where a stimulant is required to aid nature in restoring a lost appetite and infusing a vigorous action to the debilitated functions, we can recommend these Bitters. Hubbel's Golden Bitters are evidently intended to improve the debilitated human system, rather than to tickle the palate, and are, therefore a harmless and safe remedy o keep in the house.—*New York Weekly Day Book.*

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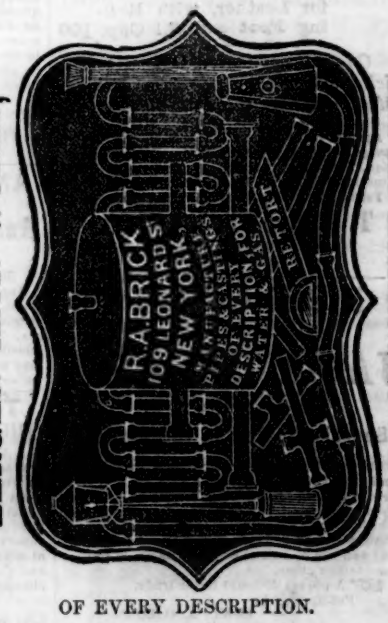

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